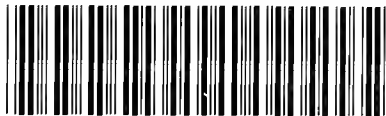


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LONDON NATURAL HISTORY SOCIETY



A HAND LIST OF THE PLANTS
OF THE LONDON AREA

Compiled by

DOUGLAS H. KENT and J. EDWARD LOUSLEY

1951-57

Supplement to London Naturalist, 30-36

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ERRATA

- p. 16, line 19 : *For* AUBRETIA *read* AUBRIETA.
p. 17, line 4 up: *For* Gilib. *read* Usteri.
p. 24, line 7 up: *After* Alien *add* Europe, including parts of
Britain.
p. 51, line 1 : *Delete* O. FLORIBUNDA Lehm.
p. 69, line 20 : *For* PURPURASCENS *read* SUBPURPURASCENS.
p. 71, line 17 : *After* Green Street Green *add* near Farnborough:
H.M.P.
p. 134, line 18 up: *Before* Bombed sites *add* V.-c. 21.
p. 153, line 6 : *For* 21 *read* 20.
line 7 : *Before* Hackney *add* V.-c. 21.
p. 179, line 12 up: *Delete* casual.
p. 206, line 1 up: *After* at *add* Hone; F. R. Mount's Wood, Swans-
combe, 1952: H.M.P.
p. 207, line 1 : *Before* little *add* V.-c. 17.
p. 208 : *Delete* line 1.
p. 259, line 10 up: *For* CILODENDRON *read* CALODENDRON.
p. 265, line 8 : *For* A.P.S. *read* A.E.E.
p. 290, line 20 up: *For* S. CARICIS *read* SCIRPUS CARICIS.
p. 303, line 7 : *For* Esher *read* Ewell.
line 13 up: *For* C. E. Hubbard *read* F. T. Hubbard.
p. 313, line 1 up: *For* L.H.B. *read* L.B.H.

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In this work there are represented 130 families, 651 genera, 1835 species (including 260 microspecies of *Capsella*, *Viola*, *Rubus* and *Hieracium*), 19 subspecies, 268 varieties, 33 forms and 113 hybrids. The records and determinations have been contributed by 392 helpers.

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FOR THE YEAR
1955

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THE LONDON NATURALIST

No. 35 for the year 1955.



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Supplement: A Hand List of the Plants of the London Area.

Editorial

WE gratefully acknowledge the receipt through the Royal Society of a grant of £25 from the Scientific Publications Grant-in-aid towards the cost of publishing the paper by Mr. E. R. Nye in the *London Naturalist*, No. 34.

Readers will notice that this issue of the *London Naturalist* is considerably smaller than its immediate predecessors. Unfortunately, our finances have been severely strained during the past two years by the move of our library and collections to 25 Eccleston Square and by the cost of our publications, and some economy has become essential if we are to maintain the volume and scope of our activities as a Society. In these circumstances any donations which members might care to make to the Publications Fund would be acceptable. But the real remedy is of course to increase our membership, and if members will do all they can to bring in those who are interested in natural history but do not belong to any society—there must be many such people in the London area—it will be possible to restore the *London Naturalist* to its former size and to publish a wider range of readable papers. We are probably one of the largest local natural history societies in the world, and it is time we all made a special effort to place our finances on a sound footing as our centenary year of 1958 approaches.

Botanical Records for 1955.

Compiled by J. EDWARD LOUSLEY.

THE weather of 1955 will be remembered for the long warm dry spell in July, August and early September. During the holiday months climatic conditions proved no handicap to field work, although in the drier areas plants suffered severely from the drought. This period followed a disappointing spring when cold and wet conditions continued well into June and many early flowers were backward in appearance. Outside our Area, primroses provided an exceptional display but there are now few places within twenty miles of St. Paul's where these can be seen in quantity. Winter set in early with a hard frost on October 15th, and although milder conditions followed, successful late botanizing was not a feature of the year.

The records contributed during 1955 attained a very high standard. They included a number of accounts of limited areas for which individual members assumed responsibility, and also, as the following report will show, several valuable lists from private estates to which access had not previously been obtained. Some of our members are also contributing to the B.S.B.I. Distribution-Maps Scheme. Only a small selection of records of special interest can be included here, but others will appear in the *Hand-List*.

V.-c. 16, WEST KENT.

The usual careful list from the Dartford district has been contributed by H. M. Pratt, and includes *Hieracium tunbridgense* Pugsl., *H. rigens* Jord. and *H. perpropinquum* (Zahn) Pugsl. named by P. D. Sell, and the rare lettuce, *Lactuca saligna* L. (of which we had no definite record later than 1930) from the river-wall at Stone Marshes.

F. Rose reports *Galium pumilum* Murray from downs east of Westerham Hill and from north of Romney Street (where he found it in 1952). This very local bedstraw is previously recorded from our Area only from Worm's Heath, where it is probably extinct, and from Colley Hill. He has continued the investigation of the "Ravensbourne" estate, Keston, referred to last year, and amongst other important records contributed by him are *Chrysanthemum segetum* L., from a field south of Brasted (with P. and Mrs. J. Hall), and *Rhinanthus calcareus* Wilm., new to our list, from downs near Biggin Hill (with P. Hall and G. Brown).

The monkey orchid, *Orchis simia* L., on the chalk south of Shoreham was even finer this year. It was at its best on June 14th, some three weeks later than a plant I saw earlier in East Kent, and attained a height of 37.5 cm., and had 23 flowers in the spike. There are several records from the district going back to 1843, the latest of these, until the present plant was found, being that of Benjamin Harrison (of Ightham) who found it about 1895 in a railway cutting between Shoreham and Eynsford. In June I found a wood near Downe with *Orchis fuchsii* Dr. and *Platanthera chlorantha* (Cust.) Rehb. in hundreds, *Ophrys insectifera* L. in thousands, and *Listera ovata* (L.) R.Br. in myriads—an astonishing display of orchids no doubt associated with the stage of recovery of the hazel cover from coppicing. Near Downe, with Mrs. Welch, I saw *Poa compressa* L. on a wall, and *Poterium polygamum* W. & K. established for 50 yards along a field bank with chalk grassland plants. On a rubbish-tip near Downe, D. E. Kimmins found *Centaurea solstitialis* var. *intermedia* Gugl. which was identified by Dr. A. Melderis. This variety is characterised by having very short spinal appendages to the phyllaries.

V.-c. 17, SURREY.

One of the most interesting Surrey records this year was made by P. D. Orton, who found a plant of *Silene nutans* L. in grassland on a slope in Norbury Park. Here it may well be native, since there are old records for a similar habitat near Reigate. Elsewhere in our Area it grows near Ham, in Surrey, and Lessness Abbey in West Kent. A. E. Ellis has sent a correction to the records of *Orchis ustulata* L. printed in the last part of the *Hand-List*. He, and not A. P. Snell as printed, saw it in 1932 on Epsom Downs, and this and the 1924 record were from the place stated and not from the adjoining Walton Downs where I saw it.

H. Britten sent a useful list of records from about Purley and Coulsdon. These included *Ranunculus parviflorus* L. which turned up as a weed in his garden at Old Coulsdon. This is a very short distance

from Lacey Green where I found it in 1929 in an area now built over. Also as a garden weed at Old Coulsdon he records *Lepidium smithii* Hook., of which we have no previous Surrey note. Together we examined the docks in the field where he found *Rumex confertus* Willd. more carefully than was possible last year. The hybrids mentioned in the 1954 report are with *R. obtusifolius* L. spp. *agrestis* (Fries) Danser as stated, and with *R. crispus* L., and good material is now available.

On Reigate Heath, Miss B. M. C. Morgan found *Cynodon dactylon* (L.) Pers., a rare grass which has now turned up in four places in the London Area since 1948. In a fallow field in the Chipstead Valley she found a fine plant of *Verbascum blattaria* L. with yellow corollas (the white form is more often grown in gardens). The party lead by Miss E. M. C. Isherwood to Gatton Park on July 24th did most useful work in recording the flora of this estate which few botanists have been able to enter in recent years. In addition to native species of interest such as *Ranunculus circinatus* Sibth., and *Scirpus tabernaemontani* Gmel. (which may have been planted) in the lake, they found an old very overgrown and long neglected bog garden. Here *Cirsium helenioides* (L.) Hill (= *C. heterophyllum* (L.) Hill), which is native in the north of England and Scotland, *C. oleraceum* (L.) Scop., which is a common European species established in a few places in Britain, *Osmunda regalis* L., which does occur in Surrey as a native, and various horticultural plants were persisting in competition. These were no doubt planted years ago but should be noted in case they spread into other localities later on.

Mrs. J. E. Smith has sent a very useful list of species she observed on Wimbledon Common during the year. On Ham Common, Mrs. Welch found *Juncus compressus* Jacq. (determined by Dr. A. Melderis), and from a sandy bank at Walton-on-Thames, N. Y. Sandwith and R. A. Boniface record *Bromus gussonei* Parl. (confirmed by C. E. Hubbard). C. L. Collenette reports *Spiranthes spiralis* (L.) Chevall from the lawn of Hartsfield Manor, Betchworth. Autumn Lady's Tresses can thrive on lawns and members may be able to add other records from our Area from grounds to which there is not general public access.

V.-c. 18, SOUTH ESSEX.

R. M. Payne in 1954 found the hybrid of *Alopecurus geniculatus* L. with *A. pratensis* L. growing with its parents on waste ground at Loughton.

V.-c. 20, HERTS.

Bog plants are scarce in the London Area, and the news that F. Rose had found a small calcareous bog near Wormley Wood with a very interesting list of species was therefore extremely welcome. Amongst the plants he reported were *Epipactis palustris* (L.) Crantz, *Gymnadenia conopsea* R.Br. var. *densiflora* (Wahl.) Rchb., *Eleocharis quinqueflora* (F. X. Hartmann) Schwarz (*Scirpus pauciflorus* Lightf.), *Eriophorum angustifolium* Honck., and ten species of *Carex*. On a later visit with B. T. Ward, we added *Triglochin palustris* L. and *Chara*

vulgaris L. (det. G. O. Allen) to the list. There are old records for some of the species, and it was later learned that the locality was already known to contemporary Hertfordshire botanists. In Wormley Wood, F. Rose found a large clump of *Dryopteris oreopteris* (Ehrh.) Maxon, and with B. T. Ward I found *Epipactis purpurata* Sm., and *Dryopteris spinulosa* (Müll.) Watt. It is clear that this district deserves much more attention than we have previously been able to devote to it.

On an old wall in the park of Hatfield House, R. M. Harley found *Draba muralis* L., for which we have only one other locality within our Area.

V.-c. 21, MIDDLESEX.

During the year, the Kew British Botany Club have been investigating the flora of Syon Park and on one of their visits N. Y. Sandwith noticed *Scirpus tabernaemontani* C. C. Gmel. growing by the side of the lake. This is the first record for Middlesex since about 1705. Another important discovery is that of *Poa palustris* L., which R. A. Boniface found in abundance by the lake in Chiswick House grounds. Evidence accumulated recently suggests that this species may be native in water-side habitats in some places and this may be the case at Chiswick.

B. P. Pickess has contributed some useful records of rare Middlesex species including *Orchis morio* L., *Kickxia spuria* L. and *K. elatine* L. from Knightcote Farm, Harefield, and, with I. G. Johnson, *Anthyllis vulneraria* L., from a chalkpit above West Hyde. D. H. Kent reports *Trifolium fragiferum* L. from the Coach Mound, Lord's Cricket Ground, and *Echium vulgare* L. (for which there are only two other modern records from the county) from a railway bank at Preston Road near Harrow. He also found *Elodea callitrichoides* (Rich.) Casp. in abundance in the Thames at the eastern end of Strand-on-the-Green. Unless further evidence becomes available, this new locality must be regarded as an independent introduction of the plant, probably by aquarists, but it must be remembered that water-carriage could have brought it from the Longford River, or even from the Colne, where it has been found previously.

The season proved a very poor one for aliens of the Middlesex dumps, which suffered from the shortage of rain, but Dr. D. P. Young found *Trigonella foenum-graecum* L. in flower beds on the Chelsea Embankment, and a few other members reported unusual adventives. H. C. Holme sent a large collection of grasses from Regents Park in which 37 species were represented. None of these is rare but his work makes a very useful addition to our knowledge of the flora of inner London.

V.-c. 24, BUCKS.

On the Botany Section ramble to Denham on September 25th, E. B. Bangerter collected specimens of a rush previously known to T. G. Collett from an old overgrown gravel pit, and several members revisited the pit to study the rush more thoroughly a fortnight later. It has been identified by N. Y. Sandwith as *Juncus tenuis* Willd. var.

anthelatus Wiegand and matches North American material of that variety. Growing 2 feet tall, with stems which are leafy at the base, and often orange in colour, with the flowers spaced out on arcuate panicle branches and never bunched into groups, it looks very different from the *J. tenuis* forms usually found in Britain, and might well be taken for a separate species. The only other plant of importance recorded during the year from this part of our area is *Alchemilla xanthochlora* Rothm. found by Miss Rooke in Newland Park near Chorley Wood and named by Dr. S. M. Walters.

During 1955, myxomatosis reduced the rabbit population of the London Area to a low level but the mammal is not exterminated. It remains to be seen whether its numbers will recover, but in any case the sudden lessening of grazing pressure is certain to have a marked effect on our grasslands. From observations elsewhere, it is likely that at first there may be exceptional flowering of some of the orchids and other attractive species, but that the longer term prospects will be very much less favourable. On chalk grassland they are likely to include extension of the aggressive tor-grass, *Brachypodium pinnatum*, and upright brome, *Bromus erectus*, and shading out of some of the rarer species by scrub, unless the rabbit grazing is replaced by the grazing of other animals. During the next few years considerable changes may take place in some localities, and it is hoped that members will co-operate in recording them.

We are grateful to the following for their contributions during the year:—G. O. Allen, E. B. Bangerter, Mrs. D. Bennett, R. A. Boniface, J. P. M. Brenan, H. Britten, G. M. Brown, Roger Clarke, C. L. Collenette, T. G. Collett, J. W. Donovan, A. E. Ellis, J. B. Evans, A. W. Exell, R. A. Graham, P. Greenfield, P. C. Hall, Mrs. J. F. Hall, R. M. Harley, John A. Hay, F. N. Hepper, H. C. Holme, Miss E. M. C. Isherwood, Miss L. Johns, I. G. Johnson, D. H. Kent, D. E. Kimmins, G. F. Lawrence, D. McClintock, W. Mackintosh, Dr. A. Melderis, Miss B. M. C. Morgan, P. M. Newey, P. D. Orton, R. M. Payne, B. P. Pickess, H. M. Pratt, Dr. C. T. Prime, Miss Rooke, Dr. F. Rose, N. Y. Sandwith, P. D. Sell, Mrs. J. E. Smith, W. H. Spreadbury, Miss C. Swain, F. Swain, W. G. Teagle, Dr. S. M. Walters, B. T. Ward, Prof. E. H. Warmington, Mrs. B. Welch, A. W. Westrup and Dr. D. P. Young.

Cranford Park Survey

A Note on the Geology of Cranford Park

By R. F. DEARDEN.

CRANFORD Park is situated on the Taplow Terrace, some 50 ft. above the present level of the River Thames, and about 90 ft. above sea level. Though the Terrace is composed mainly of gravel, with a thin layer of soil on top, large parts of it are overlaid with

brickearth, varying in thickness, but not exceeding a few feet. In the Park this brickearth is present in the north-west corner, around Cranford House and the woods at the back of it. The edge of the brickearth coincides more or less with the edge of the wood.

Along the east side of the Park, the Terrace has been locally modified by the presence of the River Crane, which has cut a shallow valley in it, though deep enough to expose a narrow belt of London Clay along either side of the river. In places small insignificant deposits of alluvium occur on top of the clay.

The water table is only a few feet below the surface of the soil in the Park and, at the junction of the London Clay and the Terrace deposits, conditions are suitable for the development of a spring line. There is one spring in the south-east corner, well illustrating how the clay ceases to be visible from the surface at only a short distance from the river.

Cranford Park and Church

By C. H. MOORE.

The Manor of Cranford is recorded on Domesday Book as being held by the King and was subsequently divided into two, viz., Cranford St. John and Cranford le Mote. The former was given by John de Cranford to the Knights Templars, but on the abolition of the Order reverted to the King and before 1363 was vested in the Knights Hospitallers. Cranford le Mote before 1365 was the property of the Abbot and Convent of Thame. At the dissolution both became vested in the Crown, and Henry VIII gave a grant of these Manors in 1543 to Henry, Lord Windsor, who in 1549 alienated them and the Advowson of the Church to Thomas Crompton, Mary his wife and heirs. In 1603 they again became vested in the Crown, a grant was made by Queen Elizabeth I, and in 1604 the Manor and Advowson was conveyed to Sir Roger Aston, who surrendered both to the King and obtained a fresh grant. In 1618 Elizabeth, Lady Berkeley, widow of Sir Thomas Berkeley, purchased the Manors for £7000 and had a confirmation from the Crown in 1620.

The Church—St. Dunstan's—has a mediaeval rectangular chancel, a nave and a western tower. It has no porch nor aisles. The plan is in all probability that of a small Norman Church, the tower being a subsequent addition. The lower stage of the tower is the oldest portion remaining and is built of flint and stone. The upper stage of brickwork dates from 1716. The nave was destroyed by fire in 1710 and the chancel badly damaged. The nave was rebuilt in 1716 in brickwork, and the damaged part of the chancel in flint and stone, with a three-light eastern window and one three-light window on the south side of fifteenth century date. The narrow north Tudor doorway near the east end has been re-opened.

The walls and ceiling of the chancel and the chancel arch were decorated with paintings, but much damaged with damp. The work has now been renovated.

The monuments in the church are of much interest; that of Sir Roger Aston, who died in 1612, is very large and characteristic of the period. The coat-of-arms reach near the ceiling. Sir Roger Aston was Lord of the Manor and a Gentleman of the Bedchamber to James I. In the monument Sir Roger Aston kneels at a prayer desk, his two wives on either side. The son by his second wife, who died in infancy, lies in front in grave clothes.

On the north chancel wall near to Sir Roger Aston's monument were two small and simple monuments, one to Thomas Fuller and the other to Sir Charles Scarborough. The latter one remains in its original position, but the one to Thomas Fuller has been refixed. Thomas Fuller was a popular preacher of his time and author of the well-known "Worthies". He lived in troublous times. In 1640 he was lecturer at the Savoy. He found it needful to leave London in 1642 and so took refuge in Oxford. In 1647 he was rector of Waltham Abbey and in 1658 chaplain to Lord Berkeley and rector of Cranford Parish, which he held until his death in 1661. Sir Charles Scarborough died in the 70th year of his age on the 26th February 1693. He was a noted lecturer on mathematics and anatomy. He translated Euclid into English, which his son published in 1705.

The chancel of Cranford Church became the resting place of many members of the Berkeley family and contains some of their monuments, the finest of which is that of Elizabeth, Lady Berkeley, which consists of a beautifully executed effigy of the lady in a shroud, attributed by some to Bernini, but considered to be the work of the younger Nicholas Stone, who may have executed it in the studio Bernini at Rome. On the south chancel wall are the monumental tablets of George, Lord Berkeley, who died in 1658, and of George, Earl of Berkeley, who died in 1692.

The earliest registers in the church are those for marriages, dating from 1564, and those for burials, dating from 1572. Three of the bells are of Edward the Third's time and are among the oldest in Middlesex, if not the oldest.

Cranford House was a three-storey mansion with a basement containing spacious cellars. A former house stood upon the site, the eastern part of which may have been retained when the mansion was rebuilt by Vice-Admiral James, Earl of Berkeley, in brickwork in 1722. The garden had a double-bowed brick projection with a verandah. On each floor three windows were spaced to each bow. The house had an addition erected on the south side in 1792. Formerly there was in the house a chimney piece of early seventeenth century woodwork, which had a small panel in the centre bearing the date of 1664. The eighteenth century brickwork stables are interesting.

In Cranford Park there is a Roman Survey stone.

Work has also been continued on the birds, insects and plants of Cranford Park, and it is hoped to publish further notes in due course.

Mammal Ringing

A long-term scheme of ringing small mammals (mice, voles and shrews) has begun, and any member finding a marked mammal is asked to return the ring to Bruce Coleman, 3 Cranford Drive, Hayes, or to H. A. Bilby, 2 Sunnyside Cottages, High Street, Harlington. The following particulars should be given: date, locality, species of mammal, cause of death (if known).

The Survey of Bookham Common.

FOURTEENTH YEAR.

Progress Report.

VEGETATION. (Report by C. P. Castell and A. W. Jones.)

A joint investigation, by Lt.-Col. C. J. F. Bensley and the botanical team, of the aquatic and semi-aquatic animals (especially mollusca) and plants of the ditches had been planned. The sudden and lamented death of Col. Bensley was a great blow to the survey team and an appreciation of his work appears in the Annual Report of the Ecology Section. The investigation was temporarily abandoned, not only because of the death of Col. Bensley, but also because of the intensive clearing of the ditches, the cutting of the vegetation and the dumping of the material thrown up on to the banks. There was, in consequence, a great increase of nettles, docks and other plants characteristic of waste places. These formed the greater part of the vegetation, aquatic plants being sparse both in species and in quantity.

During 1954, a trench three to four feet deep was dug for a water-main from the railway tunnel to Hundred Pound Bridge. A viatical flora began to appear after the trench had been filled in. Casuals were most prolific where the trench was in or near other waste places and much less numerous in the less frequented parts of the plains. The Corn Spurrey (*Spergula arvensis*) was among the more interesting plants found in several places. There had been a previous record from only one site on the Common, in 1950.

Notes were made on the plants of disturbed and cleared places elsewhere on the Common.

A few additions were made to the floristic list. The Liverwort, *Riccia fluitans*, was found to be still dominant in Sheepbell Pond in the winter and early spring and again at the end of the year. Mr. E. W. Groves reports that it was dominant in March, while *Lemna* was more or less absent, but in September *Lemna* was dominant, with *Riccia* subdominant.

A PRELIMINARY NOTE ON THE INCREASE OF SCRUB VEGETATION. (C. P. Castell.)

In January 1951, a census of the scrub vegetation of an area of about eleven acres in the S.W. part of Central Plain was undertaken by Messrs. C. P. Castell and L. Parmenter; it was completed in a day.

As result of the Discussion on October 18th, 1955, on "Changes in the Vegetation and Fauna of Bookham Common", opened by Mr. H. W. Spreadbury, it was decided to re-survey the 1951 area. Although only four acres were examined by Miss Kennedy and Messrs. Castell and J. L. Harrison, three visits were necessary this time because of the growth in height and density of the scrub element. The team worked in parallel strips, one acting as a marker, keeping the other two within the predetermined right and left boundaries of each strip. It is hoped, therefore, that little overlapping and duplication occurred. On both occasions, the number of plants of each species higher than eight feet was counted. Blackthorn (*Prunus spinosa*) was present in both years, as a very large clump with numerous suckers, but no comparable figures are available. The figures for *Rubus* are also not comparable, as no definition of "large" was made in 1951. In 1955, clumps of up to 10 feet in diameter were counted as single plants and larger clumps were split up into units of about that size.

The numbers of plants of each species present in four acres (numbers in brackets are those over eight feet high) are tabulated below:—

		1951	1955
<i>Crataegus monogyna</i>	...	93 (15)	415 (66)
<i>Rosa canina</i>	... ..	50 —	217 (15)
<i>Rubus fruticosus</i>	... ..	25, 5 large	164 (1)
<i>Salix atrocinerea</i>	... ..	— —	1 (1)
<i>Fraxinus excelsior</i>	... ..	2 —	12 (11)
<i>Quercus robur</i>	... ..	1 —	7 (1)
<i>Malus sylvestris</i>	... ..	— —	4 —

Crataegus, *Rosa* and *Rubus* form the dominant members of the scrub element invading the grassland (*Deschampsia*, *Arrhenatherum*, etc.), and are scattered fairly evenly over the area. *Prunus* appears to be confined to one site and in 1951 measured 30 × 25 ft. It seems to have spread across and obliterated a path which formed a former boundary to the area. The diversion of the path rendered comparable measurements impossible in 1955.

The rapid rate of growth in height of *Fraxinus* is shown in the figures and the rapid spread of both *Fraxinus* and *Quercus* suggests that the scrub represents a stage in the development of Damp Oakwood. The elimination of grazing both from cattle and from rabbits will doubtless accelerate this development.

The frequency of association of *Rosa* and *Crataegus* was noted; it may be a result of the feeding habits of frugivorous birds.

The area investigated is shown in the photographs opposite.

LICHENS. (Report by J. R. Laundon.)

As hinted in the last report, work is continuing on the study of the lichen communities as well as in the preparation of a lichen flora. Unfortunately most of the published ecological work of British lichenologists has been devoted to studies of particular habitats rather than of the plant communities themselves. In attempting to draw up a classification of the lichen communities on the Common, it has, of



Fig. 1. Southern part of Central Plain, Bookham Common, from Little Bookham Road [876], looking E.N.E. 26th Sept. 1943. S.E. Wood in background; Elms of Station Copse to right. Sparse scrub of Hawthorn, Rose and Bramble in grassland of *Deschampsia caespitosa*, *Arrhenatherum elatius*, *Holcus lanatus* and *Agrostis* spp., with marked evidence of grazing visible on Hawthorn in foreground.



Fig. 2. Approximately the same view, 9th October 1955. Crack Willow (*Salix fragilis*) in centre. Ash in foreground. Note the great increase in scrub and the luxuriant grasses.

necessity, been based on the Du Rietz and Braun-Blanquet systems, both widely adopted by continental ecologists, but little used, so far, by British workers. This attempt has also, therefore, necessitated a comparison in the field with lichen communities in other parts of Britain and with those described in literature from other countries, in order to try to understand the origin, development and segregation of the communities observed on the Common.

HEMIPTERA-HETEROPTERA. (Report by E. W. Groves.)

Study of the grass-inhabiting Miridae on two selected areas on Bookham Common (one a dry-grass area on Eastern Plain, the other a damp grass area on I.O.W. Plain) was continued during 1955. Adult and larvae counts were made on six occasions between May and October.

The character of the 'damp'-grass site, situated by Bookham Stream on I.O.W. Plain (Sq. 482), is unfortunately changing. At the commencement of my investigations in 1953 the grasses *Arrhenatherum elatius* and *Deschampsia caespitosa* were the dominant elements in this quadrat from June to October. Now it becomes overgrown in the summer months with broad-leaved plants, such as *Cirsium arvense*, *Epilobium hirsutum* and *Pulicaria dysenterica*. This year, in August, even these as well as the few remaining stands of grass became almost flattened with a thick entanglement of *Calystegia sepium*. Sweeping with the net was greatly hampered and if this weed continues to spread so rapidly over the site it seems doubtful whether next year it will be possible to obtain any significant counts during August at all.

Other Heteroptera were searched for in different habitats elsewhere on the Common. Arising from this it was noted that whereas in previous years *Metatropis rufescens* H.-S. was almost certain to be common along the sides of Hill House Wood path, only one adult was taken there during 1955. This was almost certainly due to the near extinction here of its host plant, Enchanter's Nightshade (*Circaea lutetiana*), when the earth track was made up with cinders and asphalted in places during the winter and spring 1954-55.

BIRDS. (Report by G. Beven.)

Further census work has been done in Eastern Wood, Western and Isle of Wight Plains, and Chesmore and Kelsey's Farms, in order to compare the bird populations of these habitats. A report of some of the results is given on p. 21. This work will be continued. In addition it is hoped to study and record the feeding niches of birds in various habitats, especially in woodland.

There were between five and seven territories of singing male Yellow Buntings on the Western Plains in 1955 (1953, 5-6; 1954, 6-7).

A parasitic fly, found on a dead Wren on 13.11.55, was identified by L. Parmenter as *Ornithomyia fringillina* Curtis, a new record for the Common.

MAMMALS. (Report by G. Beven and C. P. Castell.)

Rabbits remain scarce since myxomatosis was noted in the area in the autumn of 1954; a rabbit dying from the disease was seen on the

Common in October 1954. In December 1954 and January 1955, a search was made by Messrs. Castell, Jones and Lawrence, of rabbit warrens and for any evidence of living rabbits. No evidence was found of occupation of warrens, but one recently occupied hole was found in a ditch bank by the boundary of the Common (188). Rabbit droppings were, however, found in various parts of the Common and there was much evidence of rabbit activity just west of South East Ditch (912) and a local resident stated that they were still to be seen feeding in the fields east of the Common near 91. Although droppings were still visible in the grassland of Central Plains, the ant hills were no longer grazed and grass was spreading over them. One rabbit was seen in Kelsey's Wood on 8.5.55 and one in adjacent farmland on 13.3.55.

Grey Squirrels also remained scarce in Eastern Wood.

Mr. J. L. Harrison devoted part of a period of leave from Malaya to a study of the smaller mammals and the results of his investigations appear on p. 12.

Some Small Mammals of Bookham Common

By J. L. HARRISON.

TOWARDS the end of 1955 the writer lived for some months sufficiently near to Bookham for short daily visits to be practicable, and decided to carry out some trapping of small mammals. Since the stay was for a few months only, no extended studies were possible, and the work was limited to a simple survey of species and their relative abundance. Two dozen break-back mouse-traps were borrowed from Mr. R. A. Davis, and 14 "Longworth small mammal traps" (as described by Chitty & Kempson, 1949) were borrowed from the Department of Entomology, London School of Hygiene and Tropical Medicine. Thanks are due to Mr. Davis, and to Dr. D. S. Bertram, acting head of the latter department.

Species found during the survey were as follows:—

<i>Sorex araneus</i> Linn.	Common Shrew
<i>Neomys fodiens</i> Schreber	Water Shrew
<i>Clethrionomys glareolus</i> Schreber	Bank Vole
<i>Microtus agrestis</i> (Linn.)	Short-tailed Vole
<i>Apodemus sylvaticus</i> (Linn.)	Long-tailed Field-Mouse
<i>Micromys minutus</i> (Pallas)	Harvest Mouse

These names are as in Harrison Matthews (1952). Identifications were made to species with the help of this work and of the keys given by Hinton (1931) and Morrison Scott (1952). No attempt was made to determine subspecies, although there is no reason to suppose that other than the common English races were present. The various works available, however, did not provide an altogether satisfactory means of identifying these animals, and for the benefit of future workers I

offer the following key to the small mammals which may reasonably be expected to occur.

As far as possible this key has been confined to characters which could be observed on a live animal. When using size as a criterion it must be remembered, of course, that young animals are smaller. The head and the hindfoot, however, reach adult size while the animal is still young, so that hindfoot (and skull) measurements are fairly reliable characters for most specimens, and equally that an unduly large hindfoot and head will indicate a young specimen of a larger species.

The measurements given under each species are intended to be typical ones rather than absolutely diagnostic. Body lengths are those of dead, relaxed, and straightened specimens. A live animal, crouched, may appear very much shorter.

KEY TO SMALL MAMMALS LIKELY TO OCCUR AT BOOKHAM.

(Notes—Rough sizes are given in inches, but accurate measurements are in millimetres (25 mm. = 1 inch approx.). Standard sizes are: H & B = length of body, i.e. head and body, from tip of nose to anus (body extended); T = length of tail from anus to tip (undamaged), also sometimes expressed as a percentage of H & B; HF = length of hindfoot from heel to the tip of the longest toe, without the claws.)

1. Larger animals, i.e. "rats", body 8 in. (200 mm.) long or more, HF over 30 mm. ... 2.
- Smaller animals, "mice", body less than 5 in. (130 mm.), HF less than 30 mm. ... 4.
2. Ears small and hairy; tail about half as long as body, and hairy . . . Water Vole, *Arvicola amphibius* (Linn.) (H. & B. 200 mm., T 110 mm., HF 31-35 mm.).
- Ears membranous, tail nearly as long as the body, hairless and scaly ... 3.
3. Slightly larger, body about ten inches, HF 40-45 mm.; tail as long as or shorter than the body . . . Brown Rat, *Rattus norvegicus* (Berkenhout) (H & B 250 mm., T 220 mm., HF 40-45 mm.).
- Slightly smaller, body about eight inches, HF about 35 mm.; tail longer than body . . . Ship Rat, *Rattus rattus* (Linn.) (H & B 200 mm., T 200-250 mm., HF 32-36 mm.) (also called the "Black Rat", although in fact the majority of specimens are brown).
4. A shrew, with a long slender mobile nose and very small eyes and ears buried in the fur of the head ... 5.
- A mouse or vole, with a short or blunt nose, conspicuous eyes, and ears which may be buried in the fur of the head, but are usually conspicuous ... 7.
5. Colour almost black and white, being very dark above, very pale below; slightly larger, HF about 17 mm.; feet fringed and tail keeled with white hairs; with only four unicuspid teeth* . . . Water Shrew, *Neomys fodiens* Schreber (H & B 80-90 mm., T 45-55 mm., HF 17 mm.).
- Colour brownish above, buff below, so that there is no great contrast; smaller, HF 14 or less; without fringing white hairs; with 5 unicuspids* ... 6.
6. Slightly larger, body about 2½ ins.; tail about 55%; third upper unicuspid smaller than the second . . . Common Shrew, *Sorex araneus* Linn. (H & B 60-70 mm., T 35-40 mm., HF 12-13 mm.).
- Slightly smaller, body less than 2½ ins.; tail about 70%; third upper unicuspid* as big as or bigger than the second . . . Pygmy Shrew, *Sorex minutus* Linn. (H & B 55-65 mm., T 35-45 mm., HF 10-11 mm.).

*In the upper jaw of the shrew the front teeth have two prongs, the next four or five have single prongs (unicuspids), and the next few have three prongs each. The teeth can be seen with a handlens when the lips are drawn back.

7. Tail very short, not more than half as long as the body and hairy; nose blunt; ears thick, hairy, and inconspicuous ... 8
- Tail about as long as the body; other characters various ... 9.
8. Tail nearly half as long as body; back rather reddish brown; ears clearly visible; (for teeth see Hinton, 1931) . . . Bank Vole, *Clethrionomys glareolus* Schreber (H & B 80-95 mm., T 35-40 mm., HF 15-17 mm.).
- Tail about a third as long as body; back greyish brown; ears hidden in fur of head: (for teeth see Hinton, 1931) . . . Short-tailed Vole, *Microtus agrestis* (Linn.) (H & B 85-95 mm., T 25-30 mm., HF 16-18 mm.).
9. Tail thickly haired; ears rather small. Colour yellowish-brown shading to creamy white below . . . Dormouse, *Muscardinus avellanarius* (Linn.) (H & B 65-90 mm., T 55-70 mm., HF 15-18 mm.).
- Tail almost completely naked and scaly; ears fairly large ... 10.
10. Belly a dull grey, not differing greatly from the greyish-brown of the back. Tail uniformly dark . . . House-mouse, *Mus musculus* Linn. (H & B 70-100 mm., T 70-105 mm., HF 17-19 mm.).
- Bright brown above, white below ... 11
11. Very small, body less than $2\frac{1}{2}$ ins.; tail uniformly coloured, naked and prehensile at the tip . . . Harvest-mouse, *Micromys minutus* (Pallas) (H & B 50-60 mm., T 45-60 mm., HF 13-17 mm.).
- Larger, body three inches or more; tail dark above, pale below, not at all prehensile ... 12.
12. Slightly larger, hindfoot 23-27 mm.; with an orange yellow patch on the chest tending to form a band right across joining the brown of the two sides . . . Yellow-necked Field-mouse, *Apodemus flavicollis* (Melchior) (H & B 100-115 mm., T 100-125 mm., HF 23-27 mm.).
- Slightly smaller, hindfoot 20-22 mm.; with at most a small yellow spot on the chest . . . Long-tailed Field-mouse, *Apodemus sylvaticus* (Linn.) (H & B 80-100 mm., T 70-100 mm., HF 20-23 mm.).

METHOD.

Four sample areas were trapped each first with a line of break-back traps at about 16 ft. (5 metre) intervals, and then, some one to two months later, with a line of Longworth traps at about 33 ft. (10 metre) intervals; the second line being set parallel to and at about 330 ft. (100 metres) from the first. Since each line covered about the same length (some 400 ft.), and since Chitty (1952, appendix I) found that for the short-ranging Vole a spacing of 10 yds. gave as good a sampling as a spacing of only 5 yds., the two trappings may be considered reasonably comparable.

The sample areas were as follows, place names and square numbers being as on the survey base-map given by Castell (1943), with vegetation notes from Jones (1954).

- (a) Eastern Wood (square 62, area I of Jones), Damp Oakwood.
- (b) The junction of South Eastern Wood and Central Plain (squares 85 and 86, area S of Jones) the trap line running from damp oakwood, through bracken, to grassland of *Deschampsia caespitosa* with much hawthorn and rose.
- (c) Central Plain (squares 84, 87 and 88, area R of Jones). Grassland, with plentiful hawthorn and rose bushes, the first (break-back) trapline being through the *Deschampsia* and the second (Longworth) being through the *Molinia caerulea* areas. Both lines crossed I.o.W. ditch.
- (d) The Hollows (squares 58 and 59, area N of Jones). Each trapping was with a double line of traps, 20 metres apart, the

first across Western Hollow and the top of l.o.W. Pond, the second across Eastern Hollow.

Both break-back and live (Longworth) traps were used for sampling, partly to compare the two methods and partly to create less disturbance of the population than would be occasioned by extended break-back trapping. The first trapping was with the break-backs both to provide specimens for critical determination, and to thoroughly familiarise the writer with the species.

The break-back traps, which were of the treadle type, were set for two days at each site, baited with rolled oats scattered on and around the treadle, and visited daily. The Longworth traps were used in a number of ways, but for the purpose of this survey were prebaited for two or three days and then set for one night. Each nest box was provided with plenty of dry grass, collected on the spot, and a teaspoonful of rolled oats. The tunnel of the trap was baited with a teaspoonful of rolled oats for the prebaiting period, i.e. while the door was fastened open, and this oats was renewed when the trap was set.

When an animal was found in a Longworth trap it was bolted into a glass jar or a polythene bag for examination before release. A 2 lb. jam-jar was found the most convenient.

RESULTS.

Trapping results are summarised in Table 1, where the number of each species trapped in each area by each method of trapping is shown. The column "trap nights" indicates the intensity of trapping as number of traps used multiplied by the number of nights each was set. In the totals the numbers caught in all areas are summed, and here, only, the numbers caught on the first and second nights of break-back trapping are distinguished.

TABLE 1.

Numbers of specimens, by species, caught in break-back traps (BB) in two nights, or Longworth traps (L) in one night after 2-3 days prebait.

	Method	Trap nights	Common	Water	Bank	S-tail	L-tail	Harvest
			Shrew	Shrew	Vole	Vole	F-Mouse	Mouse
			<i>Sorex</i>	<i>Neomys</i>	<i>Cleth.</i>	<i>Microtus</i>	<i>Apodemus</i>	<i>Micromys</i>
(a) Eastern Wood	BB	46	0	0	1	0	6	0
	L	14	(+1)	0	1	0	4	0
(b) Wood-Plain	BB	46	2	0	1	1	9	0
	L	14	1(+2)	0	4	0	3	0
(c) Cent. Plain	BB	42	1	0	0	2	3	1
	L	14	1	1	1	0	4	0
(d) Hollows	BB	41	3	0	0	1	4	0
	L	14	2	1	3	1	3	0
TOTALS								
BB first day only		88	4	0	2	1	15	1
BB second day		87	2	0	0	3	7	0
L, 1 day prebaited		56	4(+3)	2	9	1	14	0
All methods			13	2	11	5	36	1

In the figures for the Common Shrew some numbers are shown added in parenthesis. Although, for comparative purposes, only the catch on the third or fourth day is shown, in some cases traps were set and

visited for several days in succession, and various trials were made of methods of marking the trapped animals. Owing to their very short feeding cycle shrews are very often found dead in the traps, and the numbers shown in parenthesis are those of the ones found dead before the day counted.

The break-back trapping for bodies was carried out between 30th October and 18th November, so that biological observations on the bodies apply to a short period only and will be of interest only in the light of future observations. It is possible to estimate age from body length, when the basic data are available, so it is worth recording that the head and body lengths of the 20 *Apodemus sylvaticus* trapped between these dates were: males, 69, 78, 80, 83, 85, 88, 90, 91, 91 and 101 mm.; females, 66, 67, 71, 72, 75, 77, 78, 79, 84, and 88 mm. The specimens examined (all from woodland) appeared to have been feeding on some nutty material (acorns?), with traces of other fruit (blackberries?). There was no sign of insect food. No pregnancies were observed.

Of 12 *Sorex araneus*, of both sexes, trapped in November-January, head and body lengths were: 2 at 62, 63, 3 at 65, 2 at 66, 68, 2 at 69, and 72 mm. Specimens of other species are too few for data of this sort to be worth recording.

Infestation data from dead animals is notoriously unreliable, and fleas, etc., were not recorded. The harvest mite, *Trombicula autumnalis*, however, takes a long time to detach at these temperatures, and it is notable that all of the Field-mice (*Apodemus*) and Voles (*Clethrionomys* and *Microtus*) caught in break-backs (i.e. 30th October-18th November) were infested with this species. Most of the mites on Field-mice were around the anus, only three having mites in the ear, whereas all of the mites on the voles were confined to the ears. None of the Common Shrews examined bore mites. Those Field-mice caught during the last few days of October, during the second frost of the year, bore about twenty mites per mouse. Thereafter numbers declined rapidly, but occasional mites were noted throughout the trapping.

Trombiculid mites dwell in the soil, and only the larvae are parasitic, once in a lifetime. The numbers of parasitic larvae are thus a reflection of the numbers of hosts available in the year before. It is noteworthy that many of the workers of the Bookham Common survey complained of severe harvest-mite attack in the late summer. It is likely that the virtual disappearance of the rabbit resulting from the myxomatosis outbreak had resulted in a large population of mite larvae which lacked their normal host, the rabbit, and were, therefore, available for the infestation of mice and men. Whether the infestation of mice was higher than usual it is impossible to say, but the impression gained was that the infestation of man was unusually high. A similar phenomenon occurs with the related mite vector of scrub typhus, *Trombicula akamushi* (Audy & Harrison, 1956).

INTERPRETATION.

The interpretation of trapping results seems deceptively simple until it is studied closely. During the last couple of decades it has

been studied rather closely, so that we are now in the anomalous position of appearing to know less about it than we did twenty years ago. Without being pessimistic, it would be as well to examine one or two possible snags before drawing conclusions.

Results of trapping are likely to be affected by, among other things, the behaviour of the animals towards the traps, their range of movement, the effect of removing part of the population and the bait. The *behaviour* is complex, but is likely to involve an initial avoidance of the trap, followed by an exploration, followed in turn, according to experience of the survivors, by the avoidance called "trap-shyness", or the reverse, an undue tendency to return to traps. These phases may take different times with different species; thus the different results of the two days of break-back trapping suggest (although the numbers involved are small) that the Field-mouse comes to traps before the Short-tailed Vole. The *range of movement* determines the area drawn on by the traps, and a longer ranging species, such as the Field-mouse, will be caught in larger numbers than a short ranging one, such as the voles. Break-back trapping, by providing many empty traps, will accentuate this effect, and also, by removing part of the population, will encourage immigration, which will be different for different species. The effect of *removal* by live-traps is likely to be more insidious. Thus shrews usually die in Longworth traps so that extended live-trapping will reduce the number of shrews, and, if shrews are of any importance as predators of nestling mice, may increase the number of mice. Differences in attractiveness of *bait* may explain the comparative lack of the grass-eating Short-tailed Vole from the traps, which were baited with rolled oats. The importance of this factor may, however, be over estimated. It is likely that the main attractant to the traps is curiosity; certainly none of the animals caught in the break-backs had in fact eaten any of the bait scattered around the treadle, and insectivorous shrews were caught readily in traps of both kind. A possible factor is exemplified by the trap, set in a very wet place, from which all the dry bedding was carefully removed by a visitor later identified as a Short-tailed Vole.

The object of using the two methods of trapping was to see if they gave comparable results. It is clear from table 1 that they are broadly comparable, although the numbers obtained are rather small for statistical tests. The numbers of Field-mice compared with all other animals, and the numbers of Common Shrew compared with all others agree very closely. The Bank Voles, however, are more numerous in the Longworth traps, and a chi-squared test shows that the probability of getting such a difference by chance is only a little over one per cent. If the numbers in the Longworth traps are compared with the numbers on the first day, only, of the break-back trapping the difference is no longer significant. If this is a valid distinction, and not merely an effect of the smaller numbers, a likely explanation is that the Field-mouse is longer ranging than the Vole; both means of trapping would sample the immediate local population, and give com-

parable results at first, but the break-back trapping, by eliminating the local population of Field-mice on the first day would be able to sample the outlying population on the second, whereas once the immediate local population of Bank-vole was eliminated immigration would be slow. If this explanation is true, the best estimate of the population would be obtained by combining the results of Longworth trapping with those of the first day of break-back trapping only. As noted above, however, this may reduce the proportion of Short-tailed Vole unfairly. The estimates used, therefore, in table 2 are obtained by adding together all trappings except the second day's trapping of Field-mice.

TABLE 2.

Estimated proportions of different species from different areas obtained by adding all figures in Table 1 except those for second day's break-back trapping of Field-mice; with figures from Owl pellets (Beven, 1955) for comparison.

Area				Common Shrew	Water Shrew	Bank Vole	S.-tail Vole	L.-tail Fd.-mouse	Harvest Mouse
(a) East. Wood	...	...	...	1	0	2	0	9	0
(b) S.E. Wood/Plain	...	...	...	5	0	5	1	9	0
(c) Cent. Plain	...	...	...	2	1	1	2	5	1
(d) Hollows	...	...	...	5	1	3	2	6	0
TOTAL	...	...	...	13	2	11	5	29	1
Owl Pellets	...	...	...	5	0	20	29	29	0

It is clear from table 2 that the proportions of species in the four areas does show some variation, and the figures suggest that the Field-mouse is more numerous in the woodland. It is possible to test this by dividing the areas into woodland and non-woodland. Trapline (b) ran from woodland, through fringing bracken, to a grassy plain. The four break-back traps and two Longworth traps in the woodland zone caught a total of two Field-mice. Only Bank Voles were caught in the fringing area. The totals for woodland, therefore, are 11 Field-mice and 3 other animals; for non-woodland, 18 Field-mice and 29 others. A chi-squared test gives a value of 7.5, with a probability of well under 1% that such differences could be due to chance. Field-mice are, therefore, significantly more numerous in woodland.

DISCUSSION.

In table 2 the totals are compared with the numbers of different species recorded from Owl pellets by Beven (1955). One of the two "*Sorex* sp." has been added to the Common shrew total. In addition to these animals, Beven records Pigmy Shrew and House-mouse (neither of which were trapped) and also Whiskered Bat and Brown Rat, which would not be expected in traps.

It will be seen that for the same number of Field-mice, the owls caught twice as many Bank Voles, about six times as many Short-tailed Voles, and less than half as many shrews as the traps. Does this represent differential hunting on the part of the owls, or inefficiency of the traps? On the basis of these figures alone one cannot

say, and this is clearly a subject for investigation. The fact that the owls caught less shrews and more voles, suggests that it is not merely that the Field-mice are trapped too readily, but that shrews unexpectedly really are rather distasteful to the owls. If this is so, then perhaps voles are specially sought, or are easier to catch. Perhaps the owls hunt largely on the plains, and perhaps some of the plains, not yet investigated, are richer in Short-tailed Voles. That the owls hunt outside the areas trapped is shown by the presence of House-mouse and Brown Rat in the pellets, and although these may, as Beven suggests, come from near the cottages, both species will live in hedgerows far from cottages, and as Davis (1956) reports elsewhere in this number, in such hedgerows House-mice are about as numerous as Field-mice.

The present investigation, therefore, raises more problems than it solves, and it is very desirable that this work should be continued. There is not much to choose between break-back and live traps in results, and for long continued work live traps are clearly to be preferred. The traps used, the Longworth, suffer from two disadvantages. First they are rather expensive (something over half a guinea apiece); although efficient and easy to use, they are perhaps unnecessarily elaborate and well made for this investigation, for which a much simpler and cheaper trap would be effective. A second objection to the Longworth trap is that the opening above the door-tripping mechanism encourages animals to try to enlarge the hole, and since the traps are made of aluminium, they sometimes succeed, making the trap useless until repaired.

At present, however, it is not easy to obtain traps of any other pattern. I suggest, therefore, that some suitably ingenious member should make a few dozen traps for the use of the survey. An effective trap can be made from a break-back (which costs about 8d) by fastening the break-back (which should be of the treadle type) in the doorway of a wooden nest-box. The trap should be fastened treadle inwards, and a light metal door fixed to the spring bar, so that when the trap is released the bar springs up and, instead of killing the animal, it shuts the door. The attached diagram should make the principle

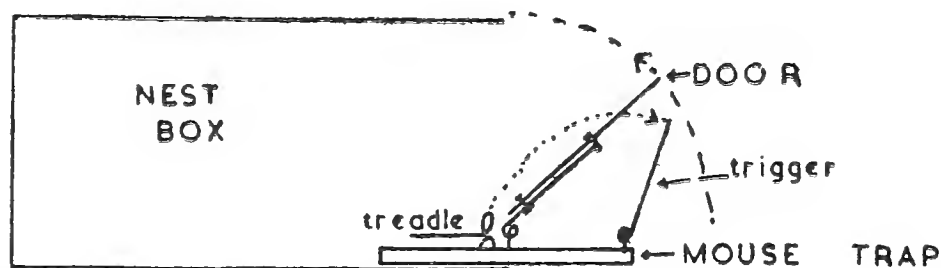


Fig. 1. Diagram of a home-made live-trap converted from a break-back trap.

clear. A mechanism for fastening the door open, for prebaiting, is necessary. The nest-box should be about six inches deep, about two inches wide (the width of a break-back mouse trap), and say three inches high.

Such traps could be operated by someone who can afford to visit Bookham on two successive Sundays and the included Saturday. Traps could be set, open, and prebaited on the first Sunday, visited, rebaited, and set on the following Saturday, and then visited, cleared, and moved on the Sunday.

I suggest that the programme of trapping should include: sampling of the more open plains, and of hedgerows bordering the Common; repeated sampling of Central Plain to investigate changes in the species abundance as the character of the plain changes from grass to woodland; and frequent sampling of Eastern Wood to investigate changes in numbers of Field-mice.

SUMMARY.

1. Four sample areas of Bookham Common were trapped both with break-back traps and with live traps ("Longworth small mammal traps"). The areas were one of damp oakwood, one transitional from wood to plain, one of grassy plain, and one of a wet valley bottom.

2. Species obtained were: the shrews *Sorex araneus* and *Neomys fodiens*, the Voles *Clethrionomys glareolus* and *Microtus agrestis*, the Field-mouse *Apodemus sylvestris*, and the Harvest Mouse *Micromys minutus*.

3. The two methods of trapping gave broadly comparable results, but Bank Voles were significantly more numerous in the live-traps.

4. The areas did not vary greatly in fauna, but the Long-tailed Fieldmouse formed a significantly larger part of the catch from woodland than from other areas.

5. Results are compared with analyses of owl pellets. The owls found many more voles than the traps, fewer shrews, and some other species.

6. For the convenience of future workers at Bookham a key to the species likely to occur is given.

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Further Observations on the Bird Population of an Oakwood in Surrey

(Eastern Wood, Bookham Common) — II

Including some comparisons with scrub and farmland.

By GEOFFREY BEVEN.

The Ecological Section of the London Natural History Society has continued its survey of Eastern Wood, and has also been making regular bird counts on both Western and Isle of Wight plains, and in some farmland adjacent to the Common.

The methods and objects of the survey have been described previously (Beven 1953), but in what follows emphasis will be laid on:

- (1) The variation in density of territories of singing males of certain species from year to year.
- (2) The variation in numbers of certain species throughout the year.
- (3) Some habitat preferences at different seasons of Longtailed Tits, Chaffinches and Wood Pigeons.

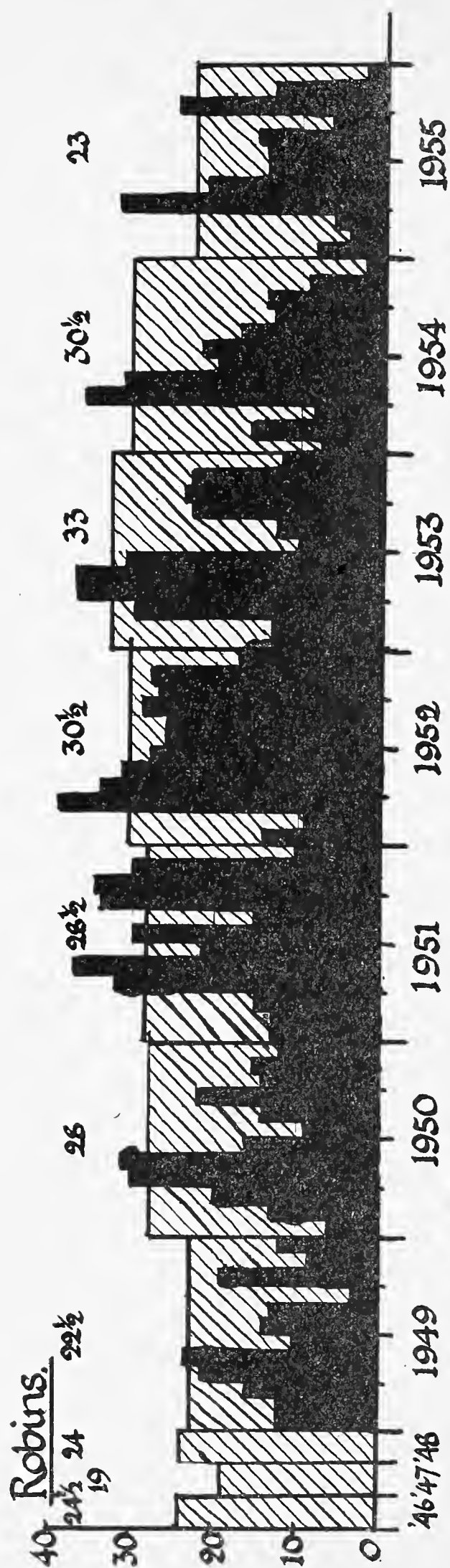
Habitats: (1) *Eastern Wood* is a sample of mature pedunculate oakwood on clay. It measures 1,600 × 1,100 feet, and is about 40 acres in extent (see Steele 1947, Beven 1951, 1953).

(2) *Western and Isle of Wight Plains:* These plains, of about 40 acres, are mainly of rough grass with scattered clumps and bushes of hawthorn, bramble and blackthorn. There is an alluvial belt along Bookham Stream, and this is marshy and sometimes waterlogged. (For more details see Currie 1950.)

(3) *Farmland:* Chesmore and Kelsey's Farms consist of approximately 80 acres, 40% of which were arable and 60% pasture during 1954 and 1955. The crops were oats, rye, cattle kale and hay. These farms (map reference 181 and 252) adjoin the common on the north, and oakwood on the latter therefore forms part of the farm boundaries.

Method: The position of each bird was marked on a map, separate copies of which were kept for each count. Visits were made at least once monthly, and always included one in the first half of each month. The territories were estimated by mapping the constant positions of singing males.

The Robin Population and the Vegetation. As indicated in figure I, the number of Robin territories in Eastern Wood decreased to 19 in 1947, after the severe winter of 1946-7, when presumably many died. The Robins increased over the next six years to a maximum of 33 territories in 1953. This increase is perhaps partly due to the increasing density of secondary growth during this period. Since 1953, there





 No. of Robin Territories in the spring for each year. (the actual figures are given above the columns.)
 No. of Robins counted each month (maximum). Counts not done in 1946 - 1948.

Fig. 1. Diagram showing the number of territories of singing male Robins in Eastern Wood during the years 1946-1955, and also the numbers of Robins counted in each month of the year from 1949-1955.

has been a decrease in population. This is probably partly due to felling of some oaks and birches in one area of the wood in 1952 (map reference 641, 642, 644, 645, and 618). In this area the Robins decreased in 1947, but returned to their "1946" level in 1948, and thereafter increased to a maximum in 1952. A slight reduction in 1953 and 1954 was followed by a greater decrease in 1955. Important changes have occurred in this area as a result of the felling. At first there was some opening of the canopy and clearing of some scrub and ground vegetation. Now bramble has spread over much of the cleared ground forming an almost impenetrable mat, and there has been considerable invasion of bracken. There is, therefore, much less bare ground here than in the more dense parts of the wood, where the canopy is complete or where there is much hawthorn scrub. The Robin normally feeds by perching on a low branch to watch the ground for small invertebrates. On seeing one it flies down to eat it and returns to a perch. It may hop about the ground seeking prey, but does not turn over leaves. It, therefore, requires some open ground for feeding (Lack 1948), and probably has difficulty in finding food under dense bramble tangles or bracken. The presence of dense hawthorn allows more Robins to occur (Beven 1953), and this may be due to the formation of some bare ground in its vicinity by the hawthorn shading out the bracken, bramble and grass. Another factor in the decrease of Robins may have been the 'coppicing' of about $\frac{3}{4}$ acre of hazel in 1955. As a result there is less bare ground. Coppicing allows grass and bracken to grow in the area, whereas in the uncoppiced parts, the ground is mainly covered by leaf litter, and a little thin bramble.

Figure I also shows the variation in numbers of Robins counted from month to month in Eastern Wood. An apparent reduction occurs during July and August, and during the winter. When moulting in July, the Robin becomes very inconspicuous, and ceases to sing. In addition there is much dense vegetation at this season, and the bird is hard to find. Nevertheless, it is still in the wood and it can be found sometimes in fair abundance as in 1952 and 1954, and every year it reappears "in strength" by October, when it sings again. There is thus *not* a true reduction in population in July and August. In the colder winter months (December to February) conditions are very different. Robins are then easy to find. Disturbance of the leaf litter will quickly bring a bird down to feed. It is, therefore, reasonable to assume that the definite reduction observed at this season is a real one. Many Robins doubtless leave the wood in December, and return in March and April. These figures confirm earlier impressions.

Previous observations suggested that the volume of song of Robins decreased in more open habitats earlier (i.e. in April) than in dense woodland where it waned in June (Beven 1953). Further observations made in 1954 have confirmed that this is so, a comparison being made of Robin song on Western and Isle of Wight plains with that in Eastern Wood. The breeding of Robins thus probably takes place later in dense woodland.

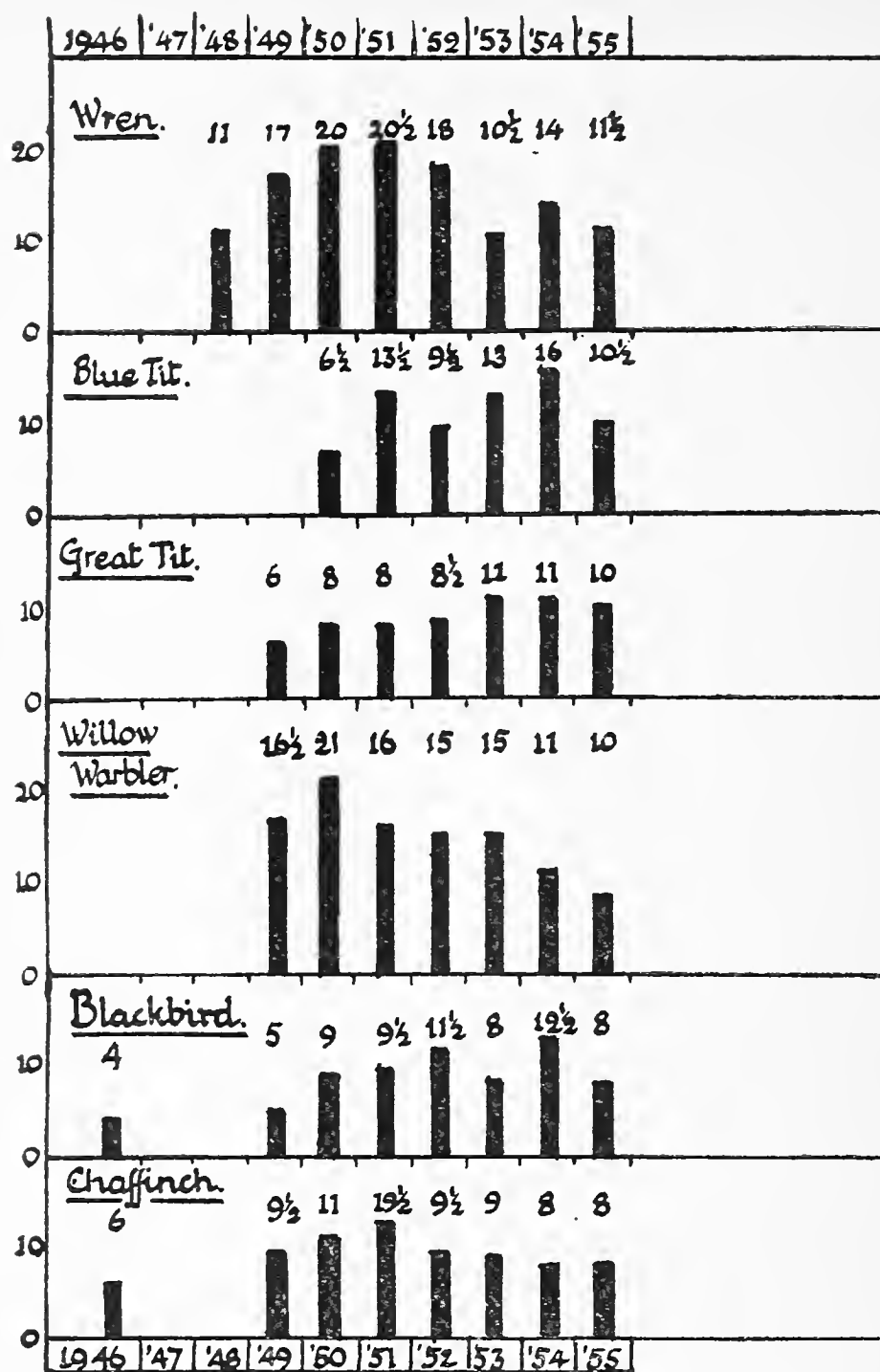


Fig. II. The numbers of territories of singing males in Eastern Wood during the years 1946-1955. The figures for each year are given above the columns, (where there are no columns no counts were made).

The Wren. As indicated from the territory figures in Fig. II the population was small in 1948, but increased until it reached a peak in 1951, and then declined until in 1953, the total was as low as in 1948. After some recovery in 1954 the figure again dropped to the 1948 level in 1955. In spite of the decrease of Wren territories in 1953 (Fig. II) it should be noted that the number of birds actually counted reached the average in June of that year (Fig. III), but even then the numbers were much less than in June 1952. The cause of this variation in numbers is obscure. Armstrong (1955) considers that Wren mortality is primarily due to unfavourable climatic and ecological conditions, and he points out that Autumn censuses always show a larger population than counts made in February. Figure III shows that the average

number of Wrens in September and October in Eastern Wood (1949-55) was 11.8 and 10.0 respectively, whereas it was 6.6 and 8.0 in February and March. Thus the autumn figures were greater than those in early Spring in spite of the more frequent song and greater conspicuousness in March (see also Fig. 9, p. 68, in Beven 1953). Bannerman (1954) suggests that the Wren is more numerous in autumn owing to immigration from elsewhere. But regular passage in the country as a whole is only noticeable from mid-September onwards, and the figures given above were found in *early* September, and, in fact, do not usually increase after this. It is possible, therefore, that some Wrens actually leave the dense wood in autumn or during the winter and return in March and April when the numbers increase again. Newly fledged young would not be expected in quantity before mid-May. However, it may well be that some of the increase in April is due to a peak of song at that time, causing an increase in conspicuousness.

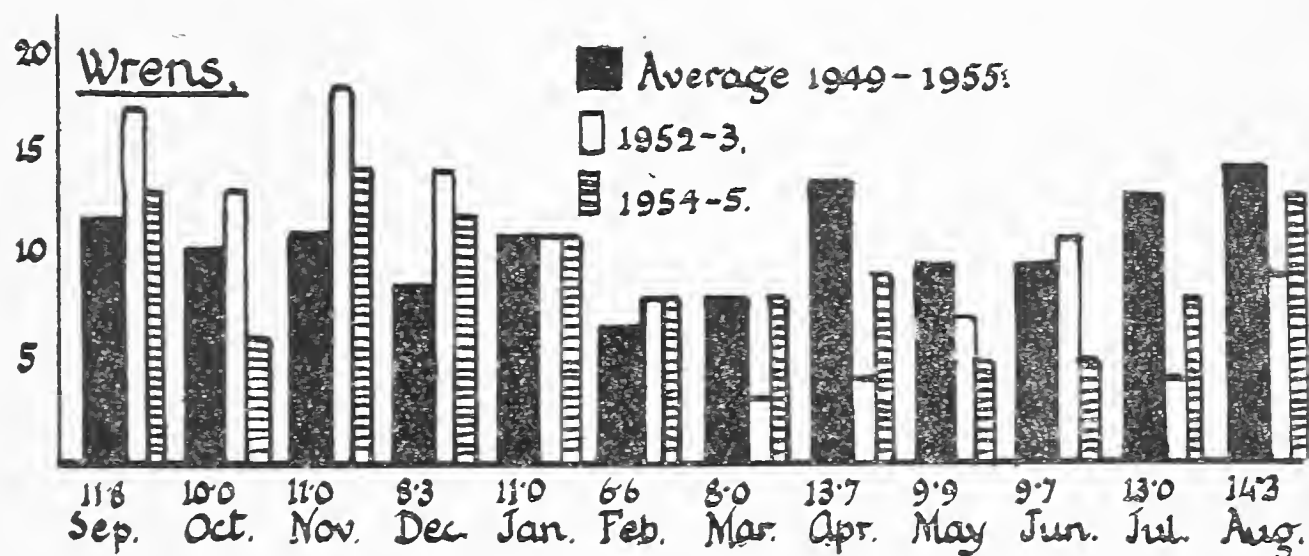


Fig. III. The numbers of Wrens counted monthly in Eastern Wood during the years 1949-1955. The average figure for each month of the period 1949-1955 is shown at the foot of each column.

The species suffered heavily in this country as a whole after the 1946-47 winter (Ticehurst and Hartley 1948), so that it is not surprising that the numbers in Eastern Wood were still small in 1948. In the London Area, September and November 1952 were unusually cold and wet (Hawkins 1953), and there were about six weeks of very cold weather in February and March 1955. Nevertheless, it is doubtful if the climatic conditions inside the very dense wood at Bookham could have produced such a profound effect on the Wren population as occurred in 1953, and the delay in recovery in 1955, although the very severe winter of 1946-7 could in fact account for the low numbers observed in 1948. During the cold spell in 1955, for example, the ground in Eastern Wood was seldom frozen hard or completely snow covered. Why then had the Wrens decreased in the succeeding breeding season? Fig. III indicates a drop in February and March, both in average numbers, and in the 1953 and 1955 figures. This suggests an annual mortality inside the wood, as it seems hardly likely they would leave

the wood then when conditions outside might well be worse. Although there was apparently a less marked decrease of population in March 1955, there was not the expected increase in numbers in April and May. It seems probable, therefore, that there was a greater mortality *outside* the wood, and fewer birds returned to it in March and April, and this may have been an important factor in the previous years (1948 and 1953).

The Tit Population. The number of Great Tit territories has shown a slight increase in the last year or two, but there has been no great change (Fig. II). The Blue Tit population, on the other hand, seems to show larger fluctuations, sometimes being apparently twice that at others. The figure for Blue Tits, however, is almost certainly an underestimate, as the song of this species is not very loud and is easily overlooked. This is borne out by the fact that the ratio of the number of Blue to Great Tits actually counted during April and May in the years 1949 to 1955 was almost exactly two to one. This is a greater proportion of Blue to Great Tits than is shown by a comparison of the territory figures as indicated by numbers of singing males.

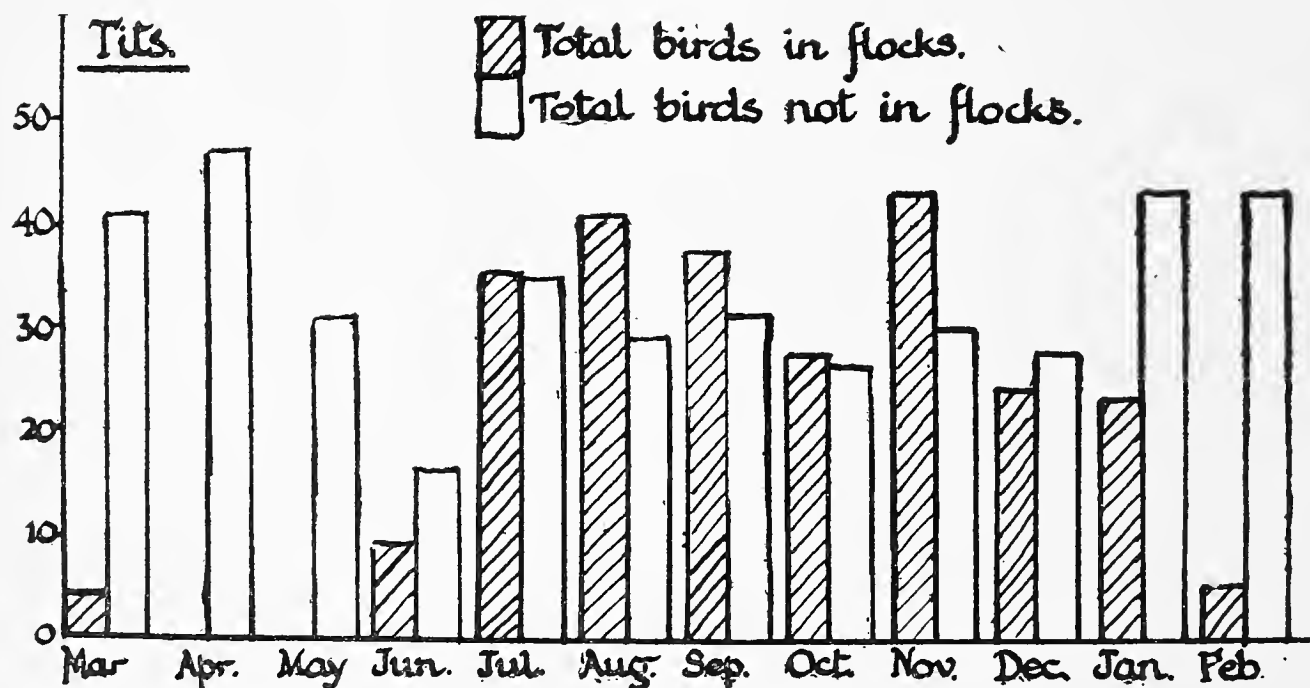


Fig. IV. The average monthly figures for the Tits of the Genus *Parus* during the years 1949-1954.

Fig. IV shows the average number of Tits of the genus *Parus*, i.e. excluding Long-tailed Tits, for each month for the six years 1949 to 1954. The following conclusions may be drawn from these figures:—

(1) The *Parus* Tit population in winter averages at least 50 to 70 birds.

(2) Study over this longer period now shows that there is in fact a decrease in the numbers of these Tits in flocks during the colder months, e.g. December and January, when some birds leave the woodland. There is some decrease in October, but the numbers rise again in November. Gibb (1950, 1954) found that some of the Blue and Great Tits were absent from Marley Wood, Wytham, near Oxford, from

October until February, especially in cold weather. The average number of flocking Paridae in December in Eastern Wood, Bookham, was about half the August figure, but the winter reduction of Tits in Wytham Wood was much greater than at Bookham. Also, according to Gibb (1954), there were always more Great and Blue Tits breeding in Wytham Wood than were present in mid-winter, but this difference has not been observed at Bookham. What are the reasons for these differences? According to Gibb (1950, 1954), Marley Wood is about 66 acres in extent. Mature and pedunculate oaks are distributed throughout and form a dominant open primary canopy. The secondary cover is largely of coppiced hazel, elder, hawthorn, birch and sapling sycamore, which are common in the order given. Thirteen or more acres, however, are without tree and shrub cover. From Gibb's descriptions it appears that, on the whole, the wood at Wytham is less dense than that at Bookham. Gibb (1954) produces figures which show that Wytham Wood contained an average of 11.3 Tits of the Genus *Parus* per 10 acres in the winters 1947-1951. Eastern Wood, Bookham, contained an average of 12.8 Tits per 10 acres in December (1949-1954, see Fig. IV). Thus, the winter population density of the two woods is probably about the same. On the other hand, more birds were present in the Spring in Wytham Wood (average for same period 18.6 per 10 acres) than in April in Eastern Wood (11.8 per 10 acres) (Fig. IV). Hence there is presumably a greater breeding density of population at Wytham and this may perhaps be accounted for by the fact that the oaks there are mature and provide many natural breeding holes, and also by the provision of numerous nest boxes (Gibb 1950). It must be admitted, however, that there has been more intensive study at Wytham than at Bookham.

(3) The winter flocks break up in February and March, and in June family parties appear and join to form mixed flocks soon afterwards.

(4) The numbers of birds not in flocks remain approximately constant throughout most of the year, and recent counts confirm the previous findings that these numbers do not decrease when the flocks form. The flocks are considered to be composed mainly of young birds; and those Tits not in flocks throughout the year are thought to be the resident adults remaining in their territories. The increase in the number of birds not in flocks from January to April is probably partly an apparent one (due to an increase in conspicuousness, such as more frequent song), but there may be an actual increase during this time owing to the dispersal of the flocks. The apparent slight decrease in early June is probably due to lessened conspicuousness just before most young birds emerge.

The Willow Warbler. The population of Willow Warblers in 1955 was less than half what it was in 1950 (Fig. II). It has decreased steadily over the intervening years. The reason for this is unknown especially as the Chiffchaff in the same wood has increased slightly during this period, but the numbers are not comparable (2.6 territories of Chiffchaff, 21.8½ of Willow Warblers).

Miss E. M. Hillman has studied the Willow Warbler population of a part of Chislehurst Common (Kent), which is mainly oakwood, but is less dense, however, than at Bookham, and contains some gorse covered grassy spaces. It is interesting to note that over the years 1952 to 1955 there has been a very similar decline in the number of territories (personal communication).

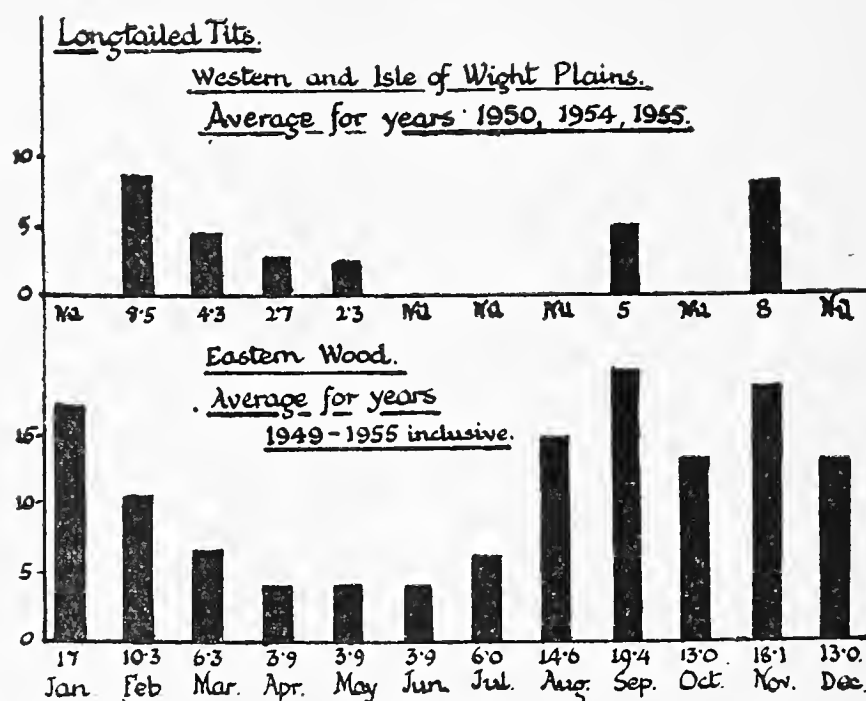


Fig. V. The monthly variation of numbers of Long-tailed Tits on the plains with scrub (Western and Isle of Wight Plains), and in oakwood (Eastern Wood).

SOME NOTES ON HABITAT PREFERENCES.

(1) *Longtailed Tits*. Longtailed Tits breed mainly in somewhat isolated hawthorn or bramble bushes on Western and Isle of Wight plains, and in small numbers in Eastern Wood (oakwood). Fig. V. illustrates that very soon after breeding they leave the plains and few are seen there until the following February. In Eastern Wood, they become scarce when the mixed Tit flocks break up in March, and increase again from July onwards, when many young birds are seen; the birds are plentiful during the winter.

(2) *Chaffinches*. Fig. VI. gives the numbers of Chaffinches counted throughout the years 1954 and 1955 in the three habitats Eastern Wood (dense oakwood), Western and Isle of Wight plains (grass and scattered scrub) and farmland adjacent to the Common.

Chaffinches enter the oakwood in March and April, and take up their territories and breed. The young appear in June, and are fed chiefly on the small caterpillars which are usually abundant on the oaks. In July, many of the chaffinches leave the wood, and almost all the rest have gone by October. There are few, if any, during the winter. This pattern has been observed with little variation every year since 1949 (seven years), see Fig. VI. In 1955, there were more chaffinches than usual in the autumn (Fig. VI, lowest line), but these were mostly in one area, and were probably attracted by maize and

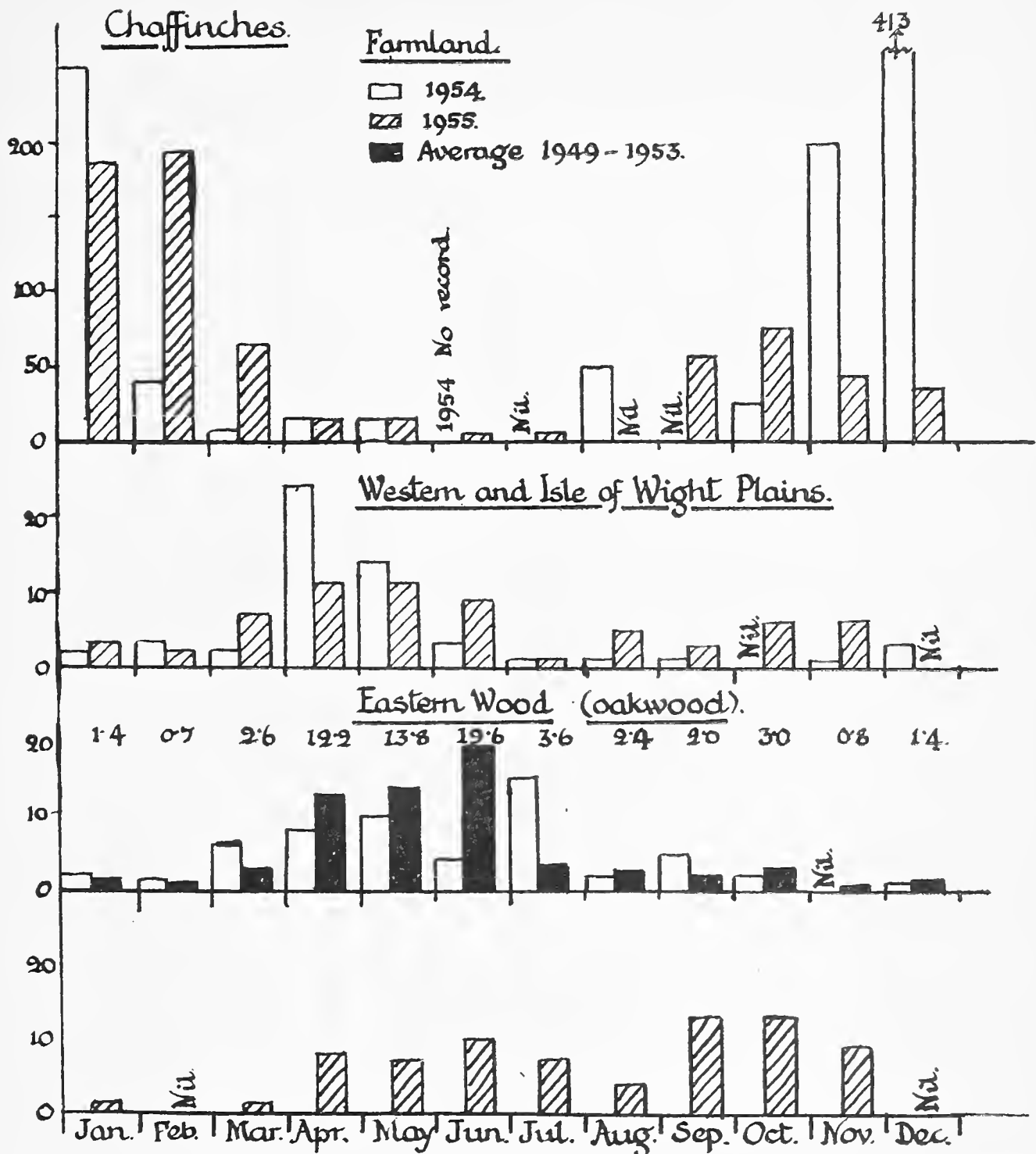


Fig. VI. The monthly variation in numbers of Chaffinches counted on farmland, on the plains with scrub, and in dense oakwood. The figures above the black columns represent the average for the years 1949-1953. The lowest line shows the figures for Eastern Wood in 1955.

wheat grain put down for pheasants. A few chaffinches sometimes come into the wood in September with the Tit flocks, Willow Warblers and Spotted Flycatchers, and feed on insects on the more open canopy of the oaks.

Although some birds appear on Western and Isle of Wight plains in January, the main immigration is in March and April. Breeding occurs and by July many chaffinches have left, and few birds are to be seen on the plains during the winter, although they often fly over. Incomplete figures obtained in 1948, 1949 and 1950 indicate a similar picture.

The state of affairs is reversed in farmland. A few birds no doubt breed in the hawthorn hedgerows and small oakwoods and farmhouse gardens. In August or September, the numbers increase, when they collect on fields of newly-cut hay or about the haystacks. During the winter much larger flocks feed in the stubble fields (mainly oats), and round about the stack yards, but these birds leave during March. There were less Chaffinches in the latter part of 1955 than in the previous winter. This may have been partly due to a change in the crops. These birds were much attracted to ploughed-in oat stubble spread with manure. After a crop of cattle kale in 1955, however, there were fewer Chaffinches in the same field. The large winter flocks contain individuals not necessarily from the surrounding woods and scrub, but also perhaps Continental birds which reach this country mainly during October. Nicholson (1951) considers that it is largely owing to the ample winter food which the Chaffinch finds on farms, that it is probably the most numerous British breeding bird.

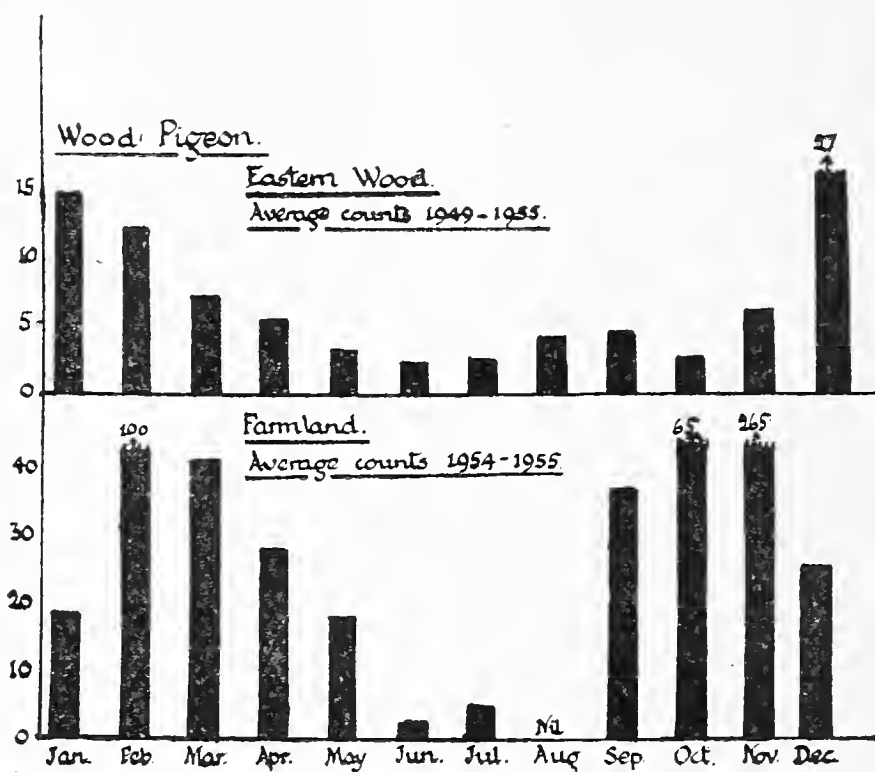


Fig. VII. The monthly variation in numbers of Wood Pigeons counted in Eastern Wood (oakwood) and farmland.

(3) *Wood Pigeons*. As is shown in Fig. VII, Wood Pigeons enter Eastern Wood (dense oakwood) during the winter months sometimes in large numbers, but the size of flocks is very variable. They are only found in the canopy, very rarely on the ground. They seem to be there mainly for resting purposes; there are no records of them feeding. The acorns are mainly on the ground by November, when most of the leaves have fallen, and very few pigeons have arrived at that time. Hazel nuts may occasionally be eaten by these birds (Colquhoun 1951, Witherby *et al.* 1938) but, although nuts may still be available in November and December in some years, they would presumably have to be taken from the ground, and this wood is apparently

too dense for pigeons to feed on the ground. It thus seems unlikely that many of the acorns or hazel nuts are consumed here. A few birds breed in the wood.

Wood pigeons also winter in flocks on adjacent farmland where they frequent the pasture and the land ploughed after crops of oats. A few birds are resident. This species is seldom observed on Western and Isle of Wight plains, although they often fly over. The grass cover here is much too long for them to feed conveniently on the ground.

SUMMARY.

(1) Further population studies in oakwood (Eastern Wood, Bookham Common) are reported, and some comparisons made with populations on Western and Isle of Wight plains and on farmland near the Common.

(2) The fluctuations in Robin and Wren populations in Eastern Wood are discussed, in relation both to the variations during the year and from year to year. Some Robins and possibly also some Wrens leave the oakwood in winter.

(3) Fluctuations of the Tit population are also examined especially in relation to the formation of flocks and comparisons are made with Wytham Wood, Oxford. Some Tits of the Genus *Parus* also leave the oakwood in winter.

(4) The Willow Warbler population of Eastern Wood has decreased by half in the last six years.

(5) Most Longtailed Tits leave the plains after breeding and they increase in numbers in Eastern Wood during the winter.

(6) Chaffinches breed on the plains and in Eastern Wood, but leave both habitats in the autumn. They are mainly winter visitors to the adjacent farmland.

(7) Wood Pigeons rest in Eastern Wood during the winter. They feed on the farmland nearby, but apparently not in the oakwood.

The English names used for birds in this paper are those used in the *Handbook of British Birds* (Witherby et al. 1938-41).

ACKNOWLEDGMENTS.

Thanks are due to all the members of the Ecology section who have assisted in this survey. Miss E. M. Hillman has helped much with advice, and assisted with the maps used for the counts, and has drawn the diagrams for this report, in addition to regular work in the field. This paper has been read by Mr. C. P. Castell, who has given valuable advice. The following, by their enthusiastic and unfailing help, have kept the survey going:—S. H. Chalke, Miss M. Kennedy, W. D. Melliush, Miss D. A. Rook and Miss V. Ruffles. In addition, many of the members have assisted with the census work and include:—Mrs. E. Adams, T. L. Bartlett, Lt.-Col. C. J. F. Bensley, E. A. Brown, Miss E. H. Burt, B. Burton, C. P. Castell, F. C. Chandler, Mrs. J. Collins, P. W. E. Currie, Miss J. Darlington, E. R. Denyer, D. H.

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The Moths of London and its Surroundings.

By C. G. M. DE WORMS, M.A., Ph.D., F.R.I.C., F.L.S., F.R.E.S.

(Continued from p. 107 of the *London Naturalist*, 34, 1955.)

THE next large group of the Noctuid moths to be described are popularly known as the Wainscots from their generally somewhat ochreous appearance. They are divided into several genera of which the larvae of the *Nonagria* are all internal feeders on *Typha*, *Phragmites*, etc., while the *Leucania* are mainly feeders on the *Gramineae*. The majority of the species inhabit marshland, a few are generally distributed, while several others affect sandhills or rocky coasts. The majority are found in the southern half of the British Isles.

Nonagria sparganii Esp. S.17.

Webb's Wainscot was only added to the British list in 1879 when it was discovered on the Kent coast. Since then it has been found to occur in suitable localities, chiefly where *Typha* flourishes, all along our southern seaboard from Suffolk to Cornwall, South Wales and the south coast of Ireland. The moth, which appears in August and September, is seldom seen far inland. The pupa is head upwards in the stem. There appears to be only one authentic record for the London Area.

SURREY. A few pupae and moths at Bookham Common in 1934 and 1935 (Finnigan, *Entom.*, 1939, 72: 22).

**Nonagria typhae* Thunb. M.21, H.20, E2.18, [E1.19], K.16, S.17.

The Bulrush Wainscot is one of the largest of this genus and seems to occur wherever *Typha latifolia* is in any quantity in nearly every part of the British Isles, even in northern Scotland. It often produces a form with reddish brown forewings, f. *fraterna*. Unlike the last species this one pupates head downwards in the stem. It also appears in late August and September. It is widespread in the Area, being reported in the 1898 list from Tottenham, Forest Gate, Walthamstow, Finchley and Hampstead. Further records include:—

MIDDLESEX. Bishop's Wood, Hampstead, and Willesden (Cockerell, *Lep. Middx.*, 1891); Stanmore, one in August 1953 (Lorimer); Greenford, Hanwell and Harefield (J. Ward); Enfield (Edelsten).

HERTS. St. Albans, Haileybury, Watford, Hoddesdon, Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (Clark).

KENT. Brockley (West, *Ent. Rec.*, 1906); Pinden, one in August 1953 (Hare); Beckenham, one in 1948 (Birchenough).

SURREY. Many pupae obtained on Arbrook Common in 1930 (C. de W.); Weybridge, a few most years (Messenger).

**Nonagria geminipuncta* Haw. M.21, H.20, E2.18, K.16, S.17.

The Twin-spotted Wainscot is often extremely abundant in reed beds where the location of its pupae may be readily spotted by a

transparent patch in the stems of the *Phragmites*. Its range seems to be over the southern part of England. Records for the London Area are sporadic, the 1898 list and Suppt. only mentioning it from Woodford and Ilford. It has also been recorded from

MIDDLESEX. Hammersmith Marshes (Cockerell, *Lep. Middx.*, 1891).

HERTS. Hoddesdon, one in 1925 (Bull; Foster, *Lep. Herts.*, 1937).

SURREY. Bred from Esher, 1903 (Woodforde: Hope Dept. Collection, Oxford); Weybridge, one in July 1952, but numerous in 1955 (Messenger).

ESSEX. Tilbury Marshes (Edelsten).

KENT. Greenhithe Marshes (V.C.H., 1908); Otford, 1955 (Manley).

Nonagria dissoluta Treits. M.21, E2.18, S.17.

The Brown-veined Wainscot is another inhabitant of the reed-bed where, like the last species, the larvae feed inside the stems of *Phragmites* and pupate head upwards. It occurs mainly in the east and south-east of England right up to Yorkshire and it is also found in Lancashire. It is not recorded in the 1898 list. South (i: 298) mentions it from MIDDLESEX. It has also been noted from

ESSEX. Tilbury Marshes (Edelsten).

SURREY. Weybridge, one on July 20, 1952, and one on August 22, 1955 (Messenger).

**Chilodes maritima* Tausch. M.21, E2.18, K.16, S.17.

Like the last two species, the Silky Wainscot also occurs in reed beds, chiefly in the eastern and southern counties of England. It appears from June till August and produces several forms of which that with two spots on the forewings f. *bipunctata* is the most striking. The only record in the 1898 list is from Woodford.

MIDDLESEX. Hammersmith Marshes (Cockerell, *Lep. Middx.*, 1891).

ESSEX. Tilbury Marshes (Edelsten).

KENT. Greenhithe Marshes (V.C.H., 1908).

SURREY. Black Pond, Oxshott (Cockayne), also (Baynes, *Entom.*, 1910, 53: 284); Sandown Park, Esher (P. Richards, *idem.*, 251); Epsom (F. W. Jackson, *idem.*, 294); Weybridge, one on July 6, 1952, and another on August 6, 1953 (Messenger).

**Coenobia rufa* Haworth. H.20, E2.18, E1.19, K.16, S.17.

The Small Rufous Wainscot, as its name implies, is by far the smallest species in this group. It occurs freely in many localities throughout the country where the jointed rush grows. In these spots it flies often in abundance at dusk in late July, but seldom comes to light. The 1898 list and Suppt. mention it from Epping Forest, Snaresbrook and from the south-eastern suburbs where it became very scarce towards the end of last century. Other places from which it has been noted are

HERTS. Cheshunt Marsh and Aldenham Woods (King: Foster, *Lep. Herts.*, 1937).

SURREY. Wimbledon Common (Cardew); East Sheen (D. King); Esher (Gardner); Black Pond, Oxshott (Cockayne); Richmond Park, 1905 (Meldola: Hope Dept. Collection, Oxford); Weybridge, a few (Messenger).

**Arenostola fulva* Hübn. (= *pygmina* Haworth). I.L., M.21, H.20, E2.18, K.16, S.17.

The Small Wainscot is another marsh and fen lover, occurring in suitable localities all over the British Isles up to northern Scotland. It does not often appear before September and may sometimes be seen flying freely in the late afternoon, especially in the Highlands. The 1898 list gives it from many places in the Area, notably from Lea Bridge, Hackney Marshes, Chingford, Wanstead, Woodford, Bromley (Kent), Hampstead Heath, Highgate, Richmond Park and Wimbledon Common. Other records include

INNER LONDON. Kensington Gardens, 1938 (Collenette).

MIDDLESEX. Highgate, Sept. 1910 (Andrewes); Feltham, 1954 (Classey); Ruislip (Minnion).

HERTS. Haileybury, Hertford, Bushey, Broxbourne, Hoddesdon (Foster, *Lep. Herts.*, 1937).

KENT. Lee (West, *Ent. Rec.*, 1906); Otford, 1955 (W. Manley).

SURREY. Wimbledon Common (Cardew); Chertsey Meads (Brether-ton); East Sheen, 1929 (D. King); Weybridge (Messenger).

**Arenostola phragmitidis* Hübn. M.21, E2.18, K.16, S.17.

The Fen Wainscot is another well-known denizen of marshland and reed beds, mainly in the eastern and south-eastern counties, ranging up to Yorkshire and Lancashire. With its reddish forewings it is a most attractive insect to see at rest on reed stems in late July. There are only a handful of records for the London Area, the 1898 list reporting it from Lea Bridge where ten were taken in 1884, but none seen there afterwards, also from Stratford, Ilford, Barking and Greenwich Marshes where it was said to be abundant. Other records include

ESSEX. Tilbury (Edelsten).

SURREY. Weybridge, 1954 (Messenger).

Oria musculosa Hübn. S.17.

This very local species, known as the Brighton Wainscot, was at one time thought to occur only in Sussex where the original specimens were taken. In 1909, however, it was discovered near Salisbury and nearly thirty years later, in 1938, was found to be in abundance near there and on Salisbury Plain where it appears in the local cornfields usually in the first week of August. Since then it has been taken in Somerset, Hants and Surrey. The only example noted to date within the London Area was recorded near Weybridge on August 6, 1953 (Messenger).

**Rhizedra lutosa* Hübn. M.21, H.20, E2.18, K. 16, S.17.

This fine insect, the Large Wainscot, is essentially an autumn species, appearing as a rule in October. It is often abundant in large reed beds

where the larvae feed in the root crowns. It ranges well up to the north of Scotland and is widespread in Ireland. Females, in particular, are often taken at light far from any marshes. It has been reported from many parts of the Area, notably, in the 1898 list, from Clapton, Tottenham, Dulwich, Chiswick, Sydenham, Norwood and Islington and also from

MIDDLESEX. Hammersmith Marshes (Cockerell, *Lep. Middx.*, 1891); Neasden, 1905 (R. Heath: Hope Dept. Collection, Oxford); Highgate, Oct. 1911 (Andrewes); Ruislip, rare (Minnion).

HERTS. Watford (Foster, *Lep. Herts.*, 1937).

ESSEX. Tilbury (Edelsten).

KENT. Abbey Wood (Showler); Blackheath, Oct. 1949 (Hyatt); Lee (West, *Ent. Rec.*, 1906); Otford, Oct. 1955 (W. Manley).

SURREY. East Croydon, one on 7th October 1950 (Birchenough); Chipstead, one on 12th October 1946 (Johnson); common on Chertsey Meads (C. de W.; Bretherton); Weybridge, occasionally (Messenger).

(*Meliana flammea* Curtis) (K.16)

The only claim the Flame Wainscot has to be included in the list is the original British specimen said by Curtis in 1829 to have been taken near Lewisham. Since then it has not been reported in the Area. It is widespread in the Fens in the Eastern Counties in late May, and has been taken in Dorset.

**Leucania pallens* Linn. I.L., M.21, H.20, E2.18, [E1.19], K.16, S.17, B.24.

The Common Wainscot, as its name implies, seems to be by far the most widespread of this group of moths, since it occurs almost in any type of terrain where there is grass, right up to northern Scotland. It has been reported, often in plenty from every quarter of the London Area, even from the Zoo in 1953 (Bushby). In July 1955 a distinctly melanic specimen was taken near Weybridge by Mr. J. L. Messenger.

Leucania favicolor Barrett E2.18.

It was only in 1896 that this insect, known as Mathew's Wainscot, was first recognised. It was for a long time thought to be confined to this Country, but it has recently been found on the North German coast. By some it is still considered a salt marsh form of the preceding species, since it is in this terrain that it occurs on the East coast from Essex round the Thames Estuary, then along the south coast to Portsmouth. There appears to be only one authentic record for the London region, a specimen taken in Hackney Marshes (Edelsten, *Entom.*, 1910, 43: 34).

**Leucania impura* Hübn. I.L., M.21, H.20, E2.18, [E1.19], K.16, S.17, B.24.

The Smoky Wainscot is yet another very common species, occurring all over the British Isles up to the Caledonian Canal, but unlike *L. pallens* it seems to be single brooded and to appear in late June. It is

also reported in the 1898 list from all over the London region and has been recorded from the Zoo in 1954 (Bushby) and from Chelsea. It is usually abundant in the open country on the outer limits of the Area.

**Leucania straminea* Treits. M.21, H.20, E2.18, K.16, S.17.

The Southern Wainscot has often been confused with the last species, but may be readily distinguished by its more pointed forewings and paler hindwings. It is another inhabitant of reed beds, chiefly in the eastern and southern counties where it sometimes swarms in late July. The 1898 and Suppt. give it from Ilford and mention that it is locally common in marshes in the south-eastern area. Also recorded from

MIDDLESEX. Hammersmith Marshes (Cockerell, *Lep. Middx.*, 1891); near Staines (*Entom.*, 1879, 12: 255).

HERTS. Bushey Heath and Haileybury (Foster, *Lep. Herts.*, 1937).

ESSEX. Tilbury (Edelsten); Epping Forest (Clark).

KENT. Greenwich Marshes, common (West, *Ent. Rec.*, 1906); Dartford (V.C.H., 1908).

SURREY. East Sheen, August 1931 and July 1934 (D. King); Weybridge, six in 1953 and two in 1954 (Messenger); Caterham (P. Bell).

**Leucania impudens* Hübn. (= *pudorina* Schiff.). K.16, S.17.

The Striped Wainscot seems to occur not only in marshes, but also on heathland in July in many parts of southern England up to Yorkshire, while it is quite common over a large portion of Ireland. There seems to be only a sprinkling of records for London, the 1898 list mentioning it from Putney, Wimbledon Common and the south-east suburbs where it was sometimes common. Other records include

KENT. Greenhithe Marshes (V.C.H., 1908).

SURREY. Bookham (Cockayne); Richmond Park, 1896, and Oxshott Common, 1903 (Hope Dept. Collection, Oxford); Chertsey Meads, August 1950 (Bretherton); five in 1955 near Weybridge (Messenger).

Leucania obsoleta Hübn. M.21, E2.18, K.16.

The Obscure Wainscot is one of the earliest of this group to appear and is sometimes on the wing at the end of May. It seems to have a limited range occurring where reeds flourish mainly in the Eastern Counties, but also in Surrey, Sussex, Kent, Hants, and Bucks. It is not mentioned in the 1898 list, but has been reported from

MIDDLESEX. Hammersmith Marshes (Cockerell, *Lep. Middx.*, 1891); once at Enfield (Eagles).

ESSEX. Near Tilbury (Edelsten).

KENT. Brockley (West, *Ent. Rec.*, 1906).

Leucania comma Linn. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Shoulder-striped Wainscot is a fairly prevalent species in most parts of the British Isles up to mid-Scotland, appearing about the middle of June. It has been reported from a large portion of the London Area. In the 1898 list and Suppt. from Hanwell, Finchley, Harrow, Hale End, Chingford, Woodford, Dulwich, Ealing, Highgate and Wimbledon Common, also from

MIDDLESEX. Mill Hill and Harefield (Cockerell, *Lep. Middx.*, 1891); Willesden (Heath: Hope Dept. Collection, Oxford); Stanmore (Lorimer); Enfield (Edelsten); Ruislip (Minnion).

HERTS. Totteridge (Lorimer); Watford, rare (Penrose); Bricket Wood, Haileybury, Bushey, Oxhey, Barnet, Aldenham and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Loughton and Forest Gate (Sutton); Theydon Bois (Meldola: Hope Dept. Collection, Oxford); Epping Forest (Clark).

Kent. Elmers End, 1905 (Keywood); Hayes and West Wickham (Trundell, Birchenough).

SURREY. Banstead (Meldola: Hope Dept. Collection, Oxford); Chipstead, common in 1946 (Johnson); Tadworth, 1949-52 (Wheeler); Box Hill (Gardner); Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Leucania vitellina* Hübn. M.21, H.20.

The very pretty Wainscot, the Delicate, is known mainly as a migrant species which breeds sporadically in this country, appearing occasionally in June, but often in September and sometimes in numbers as in 1938. It has been taken over a wide range, chiefly along the south coast, but seems seldom to come far inland. The only two records to date for the Area are a male taken in 1886 at Finchley (E.M.M., 1889, 23: 110) and an example caught in

HERTS at Arkley on October 27, 1953 (Howarth).

Leucania albipuncta Fabr. K.16, S.17.

The White-point Wainscot is another partial migrant which, like the last species, is double-brooded, appearing more often in August than in June. For many years it became very rare, but suddenly reappeared quite commonly on the south-east coast about 1932. In this area and westwards to Dorset it seems well established, sometimes wandering well inland as a specimen was taken just outside the Area boundary at Egham on August 15, 1934 (C. de W., *Entom.*, 1934, 67: 284), while another was caught at Pinden, near Dartford, on September 11, 1951 (Hare).

**Leucania lithargyria* Esp. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

The Clay is one of the most familiar members of this group during the high summer. It seems to occur in almost every part of the British Isles and also of the London Area, being recorded from the Zoo in Regent's Park in 1953 (Bushby) and from the City bombed sites in 1952 (Wheeler).

**Leucania conigera* Esp. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

The Brown-line Bright-eye is another very prevalent insect in July ranging the British Isles to Ross-shire and Ireland. It has been recorded in the London Area, in the 1898 list and Suppt., from Chelsea, Tooting, Harrow, Hanwell, Clapton, Hale End, Brockley, Barnes and Wimbledon Common. Other records include.

MIDDLESEX. Enfield (Edelsten); Greenford and Southall (J. Ward); Stanmore (Lorimer); Mill Hill, Finchley, Harefield (Cockerell, *Lep. Middx.*, 1891).

HERTS. Haileybury, Bricket Wood, Hertford, Oxhey, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937); Watford, scarce (Penrose).

ESSEX. Loughton (Sutton); Tilbury (Edelsten).

KENT. Abbey Wood (Showler); Blackheath, 1952 (Hyatt); Hayes and West Wickham (Birchenough); Orpington (Siggs); Pett's Wood (A. Swain).

SURREY. East Sheen, 1929-34 (D. King); Ewell (Gardner); Tadworth, 1952 (Wheeler); Weybridge (Messenger).

**Mythimna turca* Linn. M.21, H.20, E2.18, E1.19, S.17, B.24.

This most handsome insect, the Double-line, is a very local species mainly in the south and south-western counties, but it is widespread in the west of Wales and has been reported from western Scotland and southern Ireland. It appears at the end of June and is often a visitor to sugar. There are numerous records for the London Area, the 1898 list giving it from Highgate Woods, Kingston and Wimbledon Common. Also reported from

HERTS. Bricket Wood and from Broxbourne (Edelsten: Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (Clark); bred from Brentwood (*Ent. Rec.*, 1907, 19: 305).

SURREY. Richmond Park, 1896 (Geldart: Hope Dept. Collection, Oxford); Wimbledon Common (Cardew); one there in 1947 (L. Wakely); Ashted and Bookham Common, 1907 (Kaye); Cobham (Waldegrave, *Ent. Rec.*, 1892, 3: 205); Weybridge, one on July 6, 1949 (Messenger).

BUCKS. Black Park, Fulmer in 1846 (V.C.H., 1905).

*(*Stilbia anomala* Haworth) (S.17).

The Anomalous is usually to be met with in August on the moors of Northern England and Scotland, though it occurs sporadically on heathland in the South. Its occurrence in the London Area is most unexpected. Only one has been recorded, from Croydon, in the 1898 list.

**Meristis trigrammica* Hufn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

The Treble-lines is a very prevalent and familiar species towards the end of May, occurring over the whole of England and Ireland, but rare in southern Scotland. Many forms have been noted, including one melanic, ab. *obscura*. It has been recorded as widespread all over the London Area, even being taken at the Zoo in Regent's Park in 1953 (Bushby), also from Clerkenwell and Highgate Woods.

The next small group comprise the Caradrinas, a small group of rather undistinguished moths, somewhat similar in appearance.

**Caradrina morpheus* Hufn.

The Mottled Rustic is another very common insect all over the British Isles up to the Highlands and in Ireland. It is equally so in

the London Area according to the 1898 list which mentions it as one of the most plentiful species in the suburbs. From

INNER LONDON it has been taken in Battersea Park in 1925 (Baynes), in Chelsea (Cockayne) and at the Zoo in 1951 and 1953 (Bushby).

**Caradrina alsines* Brahm. M.21, H.20, E2.18, K.16, S.17, B.24.

This species, the Uncertain, is readily confused with the next one, but is more ochreous and has a rougher appearance. It is found in most parts of the United Kingdom up to Scotland and is also plentiful in the London region, being reported in the 1898 list from Stamford Hill, Chingford, Woodford, Blackheath, Dulwich, Harrow and Finchley.

MIDDLESEX. Mill Hill, Harefield and Chiswick (Cockerell, *Lep. Middx.*, 1891); Stanmore (Lorimer); Southall (J. Ward); Enfield (Edelsten); Ruislip (Minnion).

HERTS. Totteridge (Lorimer); Haileybury, Bushey, East Barnet, Watford and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Buckhurst Hill, 1949 (Chapman).

KENT. Hayes, West Wickham, Addington (Birchenough).

SURREY. Esher, West Ewell (Gardner); Chipstead, very common in 1946 (Johnson); Tadworth, 1949-51 (Wheeler); Putney, East Sheen, 1929-31 (D. King); Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Caradrina taraxici* Hübn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

As already indicated, this species, the Rustic, is very similar to the preceding one, but has rather a smoother appearance. It is on the wing in July and occasionally in the early autumn and seems to be found in most parts of the British Isles and the London Area, being recorded in the 1898 list from almost every suburban district, also from the Zoo in Regent's Park in 1951 and 1953 (Bushby).

**Caradrina ambigua* Fabr. I.L., M.21, H.20, K.16, S.17.

This much more ochreous insect, Vine's Rustic, was only added to the British list in 1899. For many years it was only seen at intervals in a few localities on the South Coast, but in recent times it has become increasingly numerous, making its appearance at many places well inland in the southern counties. It seems to be continuously brooded. Its only mention in the 1898 Suppt. is a specimen taken by Mr. W. J. Kaye at Worcester Park in 1899. Recent records include

INNER LONDON. The Zoo, Regent's Park, in 1953 and 1954 (Bushby).

MIDDLESEX. Common at Greenford and Southall (J. Ward); very common at Feltham in 1953 and 1954 (Classey); Mill Hill, 1950 (H. King).

HERTS. Watford, scarce (Penrose).

KENT. Abbey Wood, 1952 (Showler); West Wickham, 1950-53 (Trundell); common at Pinden (Hare).

SURREY. Weybridge, fairly numerous most years (Messenger).

**Caradrina clavipalpis* Scop. (= *quadripunctata* Fabr.). I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

The Pale Mottled Willow is often a very common species, appearing throughout the summer until well into the autumn. It seems to occur all over the British Isles and in every quarter of the London region, being noted for

INNER LONDON. From the City (1898 list), South Kensington, 1950 (Hyatt), the Zoo, 1953 (Bushby) and Battersea Park in 1925 (Baynes).

**Laphygma exigua* Hübn. I.L., M.21, E2.18, K.16, S.17.

This notoriously migrant species, the Small Mottled Willow, has sporadic outbursts in this country, sometimes occurring in great plenty, especially along our southern coasts and sometimes well inland. Its last appearance in such numbers was in 1938, while in 1952 and again in 1955 it was taken in March. The 1898 list reports it only from Greenwich. It has also been recorded for the Area from

INNER LONDON. Camberwell (*Entom.*, 1877, **10**: 301).

MIDDLESEX. Pinner, 1906 (Tautz: Hope Dept. Collection, Oxford); Hackney Marshes (Classey: *Entom.*, 1940, **73**: 21).

ESSEX. Buckhurst Hill in 1952 (Chapman).

KENT. West Wickham, two in 1952 (Birchenough); also taken there in 1950 and 1953 (Trundell); Pinden, near Dartford, a few (Hare).

SURREY. Kingston Hill (Tautz: Hope Dept. Collection, Oxford); Chipstead, one on Sept. 22, 1945 (Johnson); Weybridge, one in March 1952 (Messenger); Tooting Bec, three at light on October 10, 1947 (Christie).

**Petilampa arcuosa* Haworth M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

This small insect, the Dotted Buff, is very prevalent in July in most parts of the country up to the Highlands and also in Ireland. The female, much smaller than the male, is seldom seen on the wing. The 1898 list mentions it from Hampstead, Highgate, Tooting, Ealing, Forest Hill, Dulwich, Chingford, Woodford, Clapton, Southall and Wimbledon Common, also from

MIDDLESEX. Hampstead Heath and Mill Hill (Cockerell, *Lep. Middx.*, 1891); Stanmore (Lorimer); Greenford (J. Ward); Feltham. very common in 1954 (Classey); Ruislip (Minnion).

HERTS. Totteridge (Lorimer); Haileybury, Hertford, St. Albans, East Barnet, Bushey Heath, Watford, Oxhey Lane (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (Edelsten).

KENT. West Wickham in 1951 and 1952 (Trundell, Birchenough).

SURREY. South Croydon (Wild); Ewell, 1952 (Tunstall); Ashtead (Gardner); Richmond Park (Cockayne); Putney, 1928, and East Sheen, 1934 (D. King); Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Rusina tenebrosa* Hübn. (= *umbratica* Goeze). M.21, H.20, E2.18, E1.19, K.16, S.17.

The Brown Rustic is a very common June species practically all over the British Isles, including the Highlands where a nearly black form occurs. It is well known in the London Area, according to the 1898 list and Suppt. from Hale End, Chingford, Woodford, Finchley, Winchmore Hill, Hampstead Heath, Highgate Woods, Tooting, Greenwich, Dulwich, Wimbledon Common and Barnes, also from

MIDDLESEX. Stanmore (Lorimer); Ruislip (Minnion).

HERTS. Haileybury, Bricket Wood, East Barnet, Watford, Bushey, Cheshunt and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (Clark); Brentwood (Edelsten).

KENT. Abbey Wood, 1952 (Showler); West Wickham, Hayes (Birchenough); Orpington (Siggs).

SURREY. Chipstead, very common in 1946 (Johnson); East Sheen, 1930 (D. King); Wimbledon and Ashted (Gardner); Weybridge (Messenger).

**Amphipyra pyramidea* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

This very well-known species, the Copper Underwing, is a very familiar visitor to the sugar from August to October in the south of England, though its range only appears to reach to the north Midlands. It has been taken in most parts of the London region. Records in the 1898 list and Suppt. include Hale End, South Hackney, Stratford, Hampstead Heath, Harrow, Finchley, Bromley (Kent), Wimbledon Common and Kensington Gardens. Also reported from

INNER LONDON. The Zoo, Regent's Park, 1951-53 (Bushby).

MIDDLESEX. Mill Hill, Isleworth and Kingsbury (Cockerell, *Lep. Middx.*, 1891); Stanmore (Lorimer); Greenford, Uxbridge and Southall (J. Ward); Enfield (Edelsten); Ruislip (Minnion).

HERTS. Watford, very common (Penrose); Totteridge (Lorimer); Bricket Wood, East Barnet, Haileybury, Hoddesdon, Aldenham, Bushey, Oxhey and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Loughton (Sutton); Epping Forest (Clark).

KENT. Abbey Wood (Showler); Pett's Wood, 1951 (A. Swain); Greenwich Park, 1952 (Hyatt); West Wickham, 1911 (Keywood); Dartford Marshes (J. Burton); Hayes (Birchenough, Trundell).

SURREY. Esher, Banstead (Gardner); Putney, 1934 (D. King); Coulsdon, Tadworth (Wheeler); Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Amphipyra tragopoginis* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

The Mouse is one of the commonest moths, not only in London, but in nearly every part of the British Isles, including Ireland. It has been reported from all over the Area, especially from the inner suburbs of the Metropolis. The 1898 list gives it from Paddington and it has been taken at the light trap in the Zoo, Regent's Park (Bushby).

**Gortyna flavago* Schiff. (= *ochracea* Hübn.) I.L., M.21, H.20, E2.18, K.16, S.17.

This attractive autumn species, the Frosted Orange, is to be found in most places where thistles and burdock flourish, up to the edge of the Highlands. From these and other fleshy plants such as the foxglove the pupae may be extracted in the late summer. It appears to be very common in the London Area, the 1898 list recording it from Hampstead, Highgate, Finsbury Park, Harrow, Mill Hill, Hackney Marshes, Clapton, Ilford, Plumstead Marshes, Dulwich, Barnes, Wandsworth and Wimbledon Common.

INNER LONDON. Kilburn, Earl's Court and Maida Vale (Cockerell, *Lep. Middx.*, 1891); The Zoo, Regent's Park, 1953 (Bushby).

MIDDLESEX. Stanmore, scarce (Lorimer); Greenford and Southall (J. Ward); Enfield (Edelsten).

HERTS. St. Albans, Radlett, Watford, Haileybury, Bricket Wood, Whippendell Wood, Bushey Heath, Hoddesdon (Foster, *Lep. Herts.*, 1937).

ESSEX. Tilbury (Edelsten).

KENT. Abbey Wood, 1952 (Showler); West Wickham, each year (Birchenough); Pett's Wood, Chelsfield (A. Swain).

SURREY. Putney, fairly common in 1951 (H. Swain); Claygate, 1933 (Keywood); Banstead, at m/v trap in 1953 (Gardner); Chipstead, ten in 1946 (Johnson); Wimbledon, Bookham (Cockayne); Weybridge. common (Messenger).

**Dicycla oo* Linn. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Heart Moth is one of the specialities of the London region, since it is probably found more freely in the immediate vicinity of the Metropolis than in any other area, though it occurs in most of the south-eastern counties, but does not seem to range much further north than Northamptonshire. The dark form *renago* is sometimes as common as the type which usually appears throughout July where old oaks flourish. In the 1898 list it is given from Walthamstow, Hale End, Chingford, Bromley (Kent), Woolwich Common and Highgate Woods. There are many other records, from

MIDDLESEX. Larva at Ealing (Cockerell, *Lep. Middx.*, 1891); a specimen found on an oak trunk at Palmer's Green on July 27, 1902 (South, ii, 2), also a female at light in West London in 1906; Stanmore, fairly common (Lorimer); Pinner, sometimes numerous (Classey); Ruislip and Northolt (J. Ward).

HERTS. Arkley, common most years (Howarth); Oxhey Woods, common in 1910 (Todd); St. Albans, also Broxbourne (Edelsten: Foster, *Lep. Herts.*, 1937); Aldenham Woods in 1934 (H. King); Hoddesdon in 1920, also eight in 1922 and one in 1924 (Bull); Totteridge, common (Lorimer).

ESSEX. Theydon Bois, 1870; Romford, 1894; Chingford, 1905 (Meldola: Hope Dept. Collection, Oxford); Epping Forest and Brentwood (Raynor: V.C.H., 1903).

KENT. Plentiful at sugar in Bromley area in 1888 (South, ii, 2); Chislehurst (Brown, *Entom.*, 1902, **35**: 267); Hayes, Bexley, Eltham, West Wickham (V.C.H., 1908).

SURREY. Richmond Park and Wimbledon Common (Ficklin: V.C.H., 1902); Weybridge, sometimes common (Messenger); Norbury (*Entom.*, 1900, **33**: 249); one at Putney, July 1954 (H. Swain).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Cosmia pyralina* View. M.21, H.20, E2.18, K.16, S.17, B.24.

This very pretty insect, the Lunar-spotted Pinion, is seldom common in the rather restricted area it seems to occupy in this country since it only seems to occur in the southern half of England, though it has been taken at Chester. The bright green larva which can be beaten from small elm runners is seldom found on the big trees. It is reported in the 1898 list and Suppt. from Ealing, Harrow, Finchley, Stratford, Kingston Hill and Worcester Park, also from

MIDDLESEX. Mill Hill (Cockerell, *Lep. Middx.*, 1891); Stanmore (Lorimer); Pinner, 1910 (Tautz: Hope Dept. Collection, Oxford); Wembley, 1894 (R. Heath: *idem*); Uxbridge, one in 1952 (J. Ward); Feltham, 1954 (Classey).

HERTS. Totteridge, fairly common (Lorimer); Watford, one only (Penrose); Bushey, Oxhey, St. Albans, Hoddesdon (Foster, *Lep. Herts.*, 1937).

ESSEX. Brentwood (V.C.H., 1903).

KENT. Pett's Wood, 1951 (A. Swain); Orpington, 1948 (Siggs); Westerham (C. Edwards); Otford, July 1955 (W. Manley).

SURREY. Chipstead, frequent in 1946 (Johnson); Putney, 1931 (D. King); Tadworth, 1949-51 (Wheeler); Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Cosmia affinis* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Lesser-spotted Pinion is another elm feeder, the larvae mainly affecting the lower branches of big trees. It is fairly prevalent in late July in most of the southern counties up to the north Midlands and has been reported from many parts of the London Area. The 1898 list and Suppt. record it from Ealing, Hammersmith, Hampstead, Highgate, Southall, Chiswick, Isleworth, Chingford, Hale End, Stratford, Croydon, Dulwich, Sydenham and Richmond Park. Other records include

INNER LONDON. The Zoo, Regent's Park, 1954 (Bushby).

MIDDLESEX. Willesden, 1895 (Tautz: Hope Dept. Collection, Oxford); Mill Hill and Harefield (Cockerell, *Lep. Middx.*, 1891); Enfield (Edelsten); Greenford, 1949 only (J. Ward); Stanmore (Lorimer); Feltham, 1954 (Classey); Highgate, 1909 (Andrewes).

HERTS. Watford, scarce (Penrose); Hertford, East Barnet, Bushey, St Albans, Hoddesdon, Broxbourne and Cheshunt (Foster, *Lep. Herts.*, 1937).

ESSEX. Loughton (Sutton); Wanstead Flats, 1894 (Hope Dept. Collection, Oxford); Epping Forest (Clark).

KENT. Abbey Wood, 1953 (Showler); Beckenham, 1910 (Keywood); West Wickham (Trundell); Pett's Wood, 1953 (A. Swain); Kidbrooke (West, *Ent. Rec.*, 1906).

SURREY. Wimbledon, 1930 (D. King); Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Cosmia diffinis* Linn. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The White-spotted Pinion is on the whole much less often seen than the preceding species. It usually appears in early August and occurs over the southern half of England to the north Midlands where large elms are frequent. Larvae seem to feed on the higher branches. In the London Area it has been reported from almost all the same localities as *C. affinis*. The 1898 list mentions in addition Hanwell, Harrow, Woodford, Tooting, Eltham, Roehampton, Finchley, also Richmond Park. Also from

MIDDLESEX. Acton and Harefield (Cockerell, *Lep. Middx.*, 1891); Stanmore, one in August, 1953 (Lorimer); Feltham, 1954 (Classey); Greenford, one in 1952 (J. Ward); Enfield (Edelsten).

HERTS. Bricket Wood, St. Albans, Hertford, Haileybury, East Barnet, Bushey, Aldenham, Cheshunt, Broxbourne, Hoddesdon (Foster, *Lep. Herts.*, 1937).

ESSEX. Loughton, 1934 (Sutton); Epping Forest (Clark).

KENT. West Wickham, a few (Birchenough); also there 1950-53 (Trundell); Pett's Wood, 1948 and 1953 (A. Swain); Pinden, a few (Hare); Kidbrooke (West, *Ent. Rec.*, 1906).

SURREY. Weybridge, six in 1953 (Messenger); Streatham in 1922 (*Ent. Rec.*, 1935, 47: 116).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Calymnia trapezina* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

This well-known species, the Dun-Bar, is widespread throughout England up to the southern half of Scotland and abundant in Ireland. It appears in July in many forms and shades of colour and is very prevalent all over the London Area, being reported in nearly all the suburbs in the 1898 list and from

INNER LONDON. From the Zoo. Regent's Park, in 1954 (Bushby), and from Battersea Park in 1925 (Baynes).

(*Enargia paleacea* Esp.) (M.21).

The Angle-striped Sallow is one of the most attractive insects during August in its northerly haunts among the birch in Scotland and the northern part of England ranging as far south as Peterborough, though in recent years it has appeared locally in Hampshire. Its only claim for inclusion in the London list is a specimen taken in Highgate Wood in 1870 (*Entom.*, 1878, 12: 104, also Cockerell, *Lep. Middx.*, 1891).

**Zenobia retusa* Linn. M.21, H.20, E2.18, K.16, S.17, B.24.

This rather elusive species, the Double Kidney, is found sparingly all over the southern part of England up to the fringe of the northern counties. Its blue-green larva with a black head feeds in the terminal shoots of sallow in May. It is distinctly uncommon in the London Area

where it has been recorded in the 1898 list from Walthamstow, Ponder's End, and formerly from Eltham where a hundred insects were bred in one season from larvae obtained in the sallow shoots. Other records include

MIDDLESEX. Mill Hill (Cockerell, *Lep. Middx.*, 1891); Twickenham (Meldola: Hope Dept. Collection, Oxford).

HERTS. Cheshunt Marsh, Hertford, Bushey Heath, 1904 (Foster, *Lep. Herts*, 1937).

ESSEX. Epping Forest (V.C.H., 1903).

KENT. Westerham (C. Edwards).

SURREY. Bookham Common (Cockayne).

**Zenobia subtusa* Fabr. M.21, H.20, E2.18, K.16, S.17.

The Olive is closely related to the last species and more widespread, ranging up to the Highlands. It is found in August among poplar, on which the larva feeds between leaves. The 1898 list and Suppt. mention it from a large number of localities, including Dalston, Hackney Downs, Walthamstow, Eltham, Dulwich, Croydon, Wimbledon, Ham Common, Chiswick, Kingston and Finchley.

MIDDLESEX. Willesden, Neasden, Mill Hill, Hammersmith, South Hampstead where it was common about 1875 (Cockerell, *Lep. Middx.*, 1891); Stanmore, a few (Lorimer); Twickenham (Meldola: Hope Dept. Collection, Oxford); Greenford, one in July 1952 (J. Ward); Feltham, 1954 (Classey); Ruislip (Minnion).

HERTS. St. Albans, Haileybury, East Barnet, Waltham Cross, Watford and Bricket Wood (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (V.C.H., 1903).

KENT. Orpington, 1949 (Siggs); Chelsfield, 1949 (A. Swain); Westerham (C. Edwards); Lee, Greenhithe (V.C.H., 1908).

SURREY. Limpsfield Chart (Cockayne); East Sheen, 1930 and 1931 (D. King); Weybridge, a few each year (Messenger); Worcester Park and Reigate (V.C.H., 1902); Putney, July 1954 (H. Swain).

The next fairly large group of moths comprises what are popularly known as the Drabs and Quakers which appear at sallow bloom in the spring, and also the Sallows and Chestnuts which are associated with the autumn months.

Gypsotea leucographa Hübn. H.20, K.16, S.17, B.24.

The White-marked is a very local insect appearing at sallow bloom usually in the first week of April and occurring in Surrey, Sussex and Kent, a few of the midland counties up to York with its main headquarters in the Wye Valley area and at Witherslack in Westmorland. It is not recorded in the 1898 list. It was formerly quite common south of the Thames. The chief records are from

HERTS. Watford, numerous (Penrose).

KENT. West Wickham (V.C.H., 1908).

SURREY. Sanderstead (*Ent. Annual*, 1866); Croydon and Selsdon (*Ent. Annual*, 1865), also there in 1903 (Kaye).

BUCKS. Rickmansworth area (V.C.H., 1905).

**Cerastis rubricosa* Fabr. M.21, H.20, E2.18, E1.19, K.16, S.17.

The Red Chestnut is a very familiar visitor to sallow bloom in April ranging all over England and to the Highlands where a very blue-grey form occurs. It is given for the Area in the 1898 list and Suppt. from Hale End, Chingford, Woodford, Sydenham, Croydon, Chiswick, Hampstead, Highgate.

MIDDLESEX. Hampton, 1951 (Keywood); Stanmore, common (Lorimer); Ruislip and Northolt, two 1950-51 (J. Ward); Enfield (Edelsten).

HERTS. Totteridge, common (Lorimer); Watford, plentiful (Penrose); St. Albans, Bricket Wood, Haileybury, East Barnet, Oxhey, Broxbourne, Cheshunt (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (Clark).

KENT. Pett's Wood, 1947 (A. Swain); West Wickham (Birchenough).

SURREY. Chipstead, 1946 (Johnson); East Sheen (D. King); Weybridge (Messenger); Selsdon (Trundell).

**Panolis flammea* Schiff. (= *piniperda* Panz.). I.L., M.21, E2.18, K.16, S.17, B.24.

The Pine Beauty, as its name implies, seems to occur in the spring almost everywhere in the British Isles where *Pinus sylvestris* flourishes. The larvae are sometimes a serious pest in pine forests, especially abroad. In the London Area it is found chiefly south of the Thames. The 1898 list only gives it from Walthamstow, Shirley and Highgate, also from

INNER LONDON. The Zoo, Regent's Park, one in 1954 (Bushby).

MIDDLESEX. Scratch Wood, one in April 1948 (Lorimer); Enfield (Edelsten).

ESSEX. Brentwood (V.C.H., 1903).

KENT. Keston (D. Owen); West Wickham (Trundell); Pinden, one in 1952 (Hare); one at Otford, April 1955 (W. Manley).

SURREY. Oxshott, 1934 (Keywood); also there in 1947 (C. de W.); Addington Hills (Birchenough); Cheam, one from larch (Menzies); Wimbledon Common, 1906 (Millward, *Ent. Rec.*, 1907, 19: 90).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Orthosia gothica* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Hebrew Character is one of the commonest moths at sallow in March, April and May, being found all over the British Isles and producing some remarkable forms in the Highlands. It has been reported from almost every quarter of the London Area including the Zoo in Regent's Park in 1954 (Bushby).

**Orthosia miniosa* Fabr. M.21, H.20, E2.18, K.16, S.17.

The Blossom Underwing is sometimes very common among oak in localised haunts over the south of England up to the Lake District, but it is far from plentiful in the London Area, only being noted in the 1898 list and Suppt. from Highgate, Ealing, Wimbledon Common and Shirley, also from

MIDDLESEX. Bishop's Wood, Hampstead (Cockerell, *Lep. Middx.*, 1891); Scratch Wood, one in April 1951 (Lorimer); Enfield (Edelsten); Ruislip, rare (Minnion).

HERTS. Bricket Wood, St. Albans, Watford (Foster, *Lep. Herts.*, 1937).

ESSEX. Brentwood (Edelsten).

KENT. Hayes, West Wickham (Birchenough); Pett's Wood, 1947 (A. Swain).

SURREY. Chipstead, one in 1946 (Johnson); Bookham Common (Cockayne); Weybridge, a few (Messenger).

**Orthosia cruda* Schiff. (= *pulverulenta* Esp.). I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Small Quaker is another of the commonest species that visit the tallows in March and April. It is found all over England and Ireland, ranging to the Caledonian Canal. It is widespread throughout the London Area, being reported from nearly all the immediate vicinity of the Metropolis, including a capture at the Zoo, Regent's Park, in 1953 (Bushby).

**Orthosia stabilis* View. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

Like the last species the Common Quaker is an oak-feeder found wherever its foodplant grows. It ranges to northern Scotland where the forms are lighter than those in the southern regions. In the London Area it is often abundant in the early spring. The 1898 list mentions it from all the suburbs and also pupae at Highbury. It is recorded from all the outlying districts, and from the Zoo in 1951 and 1954 (Bushby).

**Orthosia populeti* Treits. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Lead-coloured Drab is a much more local species, affecting mainly aspen groves rather than large poplars. The larvae are sometimes common in May between the aspen leaves. The moth comes freely to light and sallow in April and is found up to the Highlands and in Ireland. It is reported from a wide area round London, notably according to the 1898 list from Wanstead, Woolwich, Plumstead, Eltham, Lee, Sydenham, Shirley and Wimbledon Common, also from

MIDDLESEX. Stanmore, two, April 1953 (Lorimer); Ruislip (Minnion).

HERTS. Rickmansworth, 1903 (Sedgwick: Hope Dept. Collection, Oxford); Northaw, one 1948 (Rutherford); Watford, one only (Penrose); Bricket Wood, St. Albans, Oxhey Wood, Bushey, Hoddesdon, Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Ongar Park Wood, 1933 (C. de W.); Brentwood and Epping Forest.

KENT. Pett's Wood, 1947 (A. Swain); Orpington, 1953 (Siggs); Dartford (West, *Ent. Rec.*, 1906).

SURREY. Wimbledon Common, larvae abundant in 1934 (Hawkins); West Weybridge, common in 1928 (C. de W.); Weybridge, three in 1954 (Messenger); Worcester Park (V.C.H., 1902).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Orthosia incerta* Hufn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Clouded Drab is another most abundant spring species appearing in almost innumerable forms from pale grey to black, while in Scotland the usual colour is red or even straw. It is found almost everywhere all over the British Isles as well as in the London Area, where it is recorded from all quarters, including Ladbroke Square, also from the Zoo, Regent's Park in 1954 (Bushby).

**Orthosia munda* Esp. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Twin-spotted Quaker is also a very frequent visitor to sallow in April, being found among oak in almost every county up to the south of Scotland. It is fairly abundant in the London Area, the 1898 list and Suppt. giving it from Harrow, Shirley, Kingston, Wimbledon and Tooting.

MIDDLESEX. Scratch Wood, common (Lorimer); Bishop's Wood, Hampstead, Mill Hill and Harefield (Cockerell, *Lep. Middx.*, 1891); Enfield (Edelsten); Ruislip (Minnion).

HERTS. Bricket Wood, St. Albans, Haileybury, Bushey Heath, Oxhey Wood, Aldenham and Broxbourne (Foster, *Lep. Herts.*, 1937); Totteridge, a few (Lorimer).

ESSEX. Epping Forest and Brentwood (Edelsten).

KENT. Shooter's Hill (D. Owen); Hayes, West Wickham (Birch-enough); Pett's Wood, 1948 (A. Swain).

SURREY. Claygate, 1936 (Keywood); Chipstead, one in 1946 (Johnson); Esher, Banstead (Gardner); common at Oxshott, 1955 (C. de W.); Weybridge (Messenger).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Orthosia advena* Schiff. (= *opima* Hübn.). I.L., M.21, H.20, E2.18, K.16, S.17.

Although this species goes under the name of the Northern Drab, it is equally widespread in the southern part of Britain, always appearing later than the rest of the group, usually in late April and May. It is very variable and ranges up to southern Scotland. It is only reported in the 1898 list from Wanstead Flats, Clapton and Forest Gate.

INNER LONDON. One at the Zoo, Regent's Park in 1953 (Bushby).

MIDDLESEX. One at Feltham on May 4, 1955 (Classey); Hampton, April 28, 1929 (Keywood); Scratch Wood, one in 1953 (Lorimer); Uxbridge (J. Ward); Ruislip, rare (Minnion).

HERTS. Totteridge, one in 1943 (Lorimer); Watford, rare (Penrose).

ESSEX. Brentwood (Edelsten).

KENT. Forest Hill (Mera, *Ent. Rec.*, 1898, **10**: 230); Pinden, two in 1952 (Hare); West Wickham in 1950 and 1953 (Trundell).

SURREY. Wimbledon Common in 1934 (Hawkins); Oxshott (Cockayne); Chipstead, three in April 1946 (Johnson); Weybridge, a few each year (Messenger); one at Putney, May 1954 (H. Swain).

**Orthosia gracilis* Fabr. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

Like the last species, the Powdered Quaker seldom appears before the second week in April and it is even more variable, for besides the normal grey form, another quite different type with deep red or brown forewings is to be found on some of the heaths in Surrey, the New Forest and marshes in Somerset where bog myrtle is prevalent. In Wales, Scotland and Ireland all forms associated with bog myrtle as a foodplant have either dull pink or orange forewings. The species has been recorded all over the London Area, the 1898 list and Suppt. mentioning it from Harrow, Finchley, Hale End, Eltham, Dulwich, Croydon, Chiswick, Ealing, Tooting, Hampstead Heath and Wimbledon Common.

INNER LONDON. The Zoo, Regent's Park in 1953 (Bushby).

MIDDLESEX. Hampton, 1929 (Keywood); Pinner (Tautz: Hope Dept. Collection, Oxford); Stanmore (Lorimer); Greenford, 1952 and Southall 1953 (J. Ward); Mill Hill and Harefield (Cockerell, *Lep. Middx.*, 1891); Enfield (Edelsten); Ruislip (Minnion).

HERTS. Watford, common (Penrose); St. Albans, Bricket Wood, Bushey, Haileybury, Oxhey Woods, Broxbourne, Watford, Barnet, Hoddesdon (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest and Brentwood (Clark).

KENT. Abbey Wood (Showler); Orpington (Siggs); Hayes and West Wickham (Birchenough); Darenth Wood (D. Owen); Dartford (West, *Ent. Rec.*, 1906); Pett's Wood (A. Swain).

SURREY. Putney, 1946 and East Sheen, 1930 (D. King); Oxshott (Cockayne); Wimbledon Common (Gardner); Weybridge (Messenger).

**Atethmia xerampelina* Hübn. I.L., M.21, H.20, E2.18, K.16, S.17.

The Centre-barred Sallow is sometimes a very prevalent insect where ash trees are common. It appears in early September and extends its range all over England to the fringe of the Highlands. It is also widespread in Ireland. London Area records are not very numerous. It is only reported in the 1898 list from Stratford, Acton, Charlton and Bromley (Kent). Other records include

INNER LONDON. The Zoo, Regent's Park in 1953 (Bushby).

MIDDLESEX. Stanmore, fairly common (Lorimer); Greenford, 1951 (J. Ward); Mill Hill (Cockerell, *Lep. Middx.*, 1891); Enfield (Edelsten).

HERTS. Watford, scarce (Penrose); Haileybury, Cheshunt (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (V.C.H., 1903).

KENT. Abbey Wood, 1953 (Showler); West Wickham, annually (Birchenough); also there in 1950 and 1953 (Trundell); Westerham (C. Edwards); Otford, Sept. 1955 (W. Manley).

SURREY. West Ewell (Gardner); Kingston, at light (*Entom*, 1908, 41: 311); Weybridge (Messenger).

**Omphaloscelis lanosa* Haw. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

This most variable species, the Lunar Underwing, is another September insect which some years swarms and in others is hardly seen. It is found all over England up to mid-Scotland and has been recorded from every part of the London Area, even from the Zoo, Regent's Park in 1952 (Bushby), from Golder's Green and Hampstead (Cockayne) and from Battersea Park in 1925 (Baynes), also from Wimbledon Common (Cardew).

**Parastichtis suspecta* Hübn. M.21, H.20, E2.18, E1.19, K.16, S.17.

The Suspected is usually prevalent among birch in July throughout England up to the Highlands where some markedly variable and dark forms occur. It does not appear to be very common in the London Area, but is recorded in the 1898 list from Dulwich where it was plentiful in 1895, also from Shirley, Richmond Park and Wimbledon Common.

MIDDLESEX. One at Feltham on August 3, 1954 (Classey); Ruislip, scarce (Minnion).

HERTS. Bushey Heath in 1899 and 1900, Aldenham, 1933 (Foster, *Lep. Herts.*, 1937).

ESSEX. Brentwood (V.C.H., 1903); Epping Forest (Edelsten).

KENT. West Wickham, two in 1952 (Trundell); Westerham (C. Edwards).

SURREY. Kew (*Ent. Annual*, 1868); Esher (Gardner); common there in 1928 (Wellman, *Ent. Rec.*, 1931, 43: 42); Weybridge (Messenger).

**Agrochola lota* Clerck M.21, H.20, E2.18, [E.19], K.16, S.17.

The Red-line Quaker is one of the commoner autumn species, seldom appearing before mid-October. It is a regular ivy feeder, is found all over England and occurs to the Highlands. The 1898 list mentions it from Hale End, Chingford, Hackney Marshes, Dulwich, Greenwich Park, Sydenham, Chiswick, Ealing, Harrow, Barnes and Wimbledon Common, also from

MIDDLESEX. Enfield (Edelsten); Ruislip and Northolt (J. Ward); Stanmore (Lorimer); Mill Hill, Bishop's Wood, Hampstead and Harrow (Cockerell, *Lep. Middx.*, 1891).

HERTS. St. Albans, Bricket Wood, Cheshunt, East Barnet, Oxhey, Bushey Heath, Aldenham, Watford, and Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. West Wickham (Trundell); Pett's Wood (A. Swain); Orpington, 1951 (Siggs).

SURREY. One at Addington in 1950 (Birchenough); Putney, 1933 (D. King); Wimbledon Common, 1911 (Cardew); Weybridge (Messenger).

**Agrochola macilenta* Hübn. M.21, H.20, K.16, S.17.

The Yellow-lined Quaker is another well-known autumn species, both at light and ivy bloom, ranging all over the British Isles up to the

edge of the Highlands. It is only moderately distributed over the London Area, only mentioned in the 1898 list and Suppt. from Finchley, Ealing, Highgate and Winchmore Hill. Other records are from

MIDDLESEX. Bishop's Wood, Hampstead, also Mill Hill and Harefield (Cockerell, *Lep. Middx.*, 1891); Ruislip (Minnion).

HERTS. Totteridge, one (Lorimer); Bricket Wood, East Barnet, Watford, Hertford, Bushey Heath, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. Abbey Wood, 1953 (Showler); Shooter's Hill (J. Burton); Hayes, West Wickham (Trundell: Birchenough); Blackheath (D. Owen); Pett's Wood, 1948 (A. Swain).

SURREY. Ashted, 1953 (Greenhill); Weybridge (Messenger).

**Agrochola circellaris* Hufn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

The Brick is usually a very plentiful species throughout the autumn months, where its larval foodplant the wych-elm occurs, all over the British Isles. It has been noted from every part of the London Area, the 1898 list recording it from most of the inner suburbs such as Hampstead, Chiswick and Hammersmith, also taken in the Zoo in 1954 (Bushby), at Battersea Park in 1925 (Baynes) and at Highgate (Andrewes).

Agrochola lychnidis Schiff. (= *pistacina* Fabr.). I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Beaded Chestnut is one of the most abundant of the autumn species, appearing in almost an endless number of forms and shades of red to pale ochreous and occurring all over England, becoming somewhat less frequent in the Highlands. It has been noted in nearly every part of the London Area, often well towards the centre of the Metropolis, being taken at the light-trap at the Zoo in Regent's Park in October, 1953 (Bushby), and at Highgate (Andrewes).

**Anchoscelis helvola* Linn. M.21, H.20, E2.18, K.16, S.17.

The Flounced Chestnut is a much more local species than the last, to which it bears some resemblance. It appears at the end of September and ranges up to the Highlands, where a smaller and brighter form is prevalent. It has been recorded from comparatively few parts of the London Area. The 1898 list and Suppt. mention Winchmore Hill, Finchley, Ilford and Wimbledon Common.

MIDDLESEX. Stanmore, a few (Lorimer).

HERTS. Bricket Wood, 1918 (Cardew); Haileybury, Hertford, Oxhey, East Barnet and Aldenham (Foster, *Lep. Herts.*, 1937).

KENT. Lee (West, *Ent. Rec.*, 1906); Hayes, West Wickham (Birchenough); Westerham (C. Edwards); Dartford, Bexley (V.C.H., 1908).

SURREY. Addington (Birchenough); Limpsfield (Cockayne); Weybridge, numerous in 1955 (Messenger).

**Anchoscelis litura* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Brown-spot Pinion is a fairly common species in most parts of the country up to the Highlands. It is another autumn insect which has been reported from most parts of the London Area, the 1898 list and Suppt. mentioning Sydenham, Chiswick, Hammersmith, Highgate Woods, Finchley, Harrow, and Wimbledon Common. Other records are

INNER LONDON. The Zoo, Regent's Park in 1952 (Bushby).

MIDDLESEX. Highgate (Andrewes); Southall (J. Ward); Mill Hill, Harefield (Cockerell, *Lep. Middx.*, 1891); Enfield (Edelsten); Ruislip (Minnion).

HERTS. Bricket Wood, Bushey, Oxhey, East Barnet, Cheshunt, Aldenham, Haileybury (Foster, *Lep. Herts.*, 1937); Watford, common (Penrose); Totteridge, numerous (Lorimer).

ESSEX. Epping Forest (Clark).

KENT. West Wickham, 1911 (Keywood); Orpington (Siggs); Pett's Wood, 1951 (A. Swain); Hayes (Trundell); Abbey Wood, 1952 (Showler).

SURREY. Claygate, 1933 (Keywood); Esher (Gardner); Putney, East Sheen in 1933 and 1934 (D. King); Coulsdon and Purley (Wheeler); Wimbledon Common, 1918 (Cardew); Weybridge (Messenger).

BUCKS. Chalfont St. Peter (V.C.H., 1905).

**Tiliacea citrigo* Linn. M.21, H.20, E2.18, K.16, S.17.

The very pretty autumn species, the Orange Sallow, seems to flourish wherever lime trees occur in most parts of England, and certainly up to the south of Scotland. The larvae can sometimes be found in quantity in late May feeding on the limes after dark. It is widespread over the London region. The 1898 list and Suppt. give it from Hale End, Buckhurst Hill, Wanstead Flats, Sydenham, Eltham, Tooting, Barnes and Chiswick.

MIDDLESEX. Stanmore, fairly common (Lorimer); Mill Hill and Highgate (Cockerell, *Lep. Middx.*, 1891); Ruislip (Minnion); Enfield (Edelsten).

HERTS. Totteridge (Lorimer); Bushey Heath, St. Albans, 1918, Broxbourne and East Barnet (Foster, *Lep. Herts.*, 1937).

ESSEX. Leyton (Meldola: Hope Dept. Collection, Oxford); Epping Forest (Robbins).

KENT. Lee (West, *Ent. Rec.*, 1906); West Wickham (Birchenough); Westerham (C. Edwards).

SURREY. Esher (Gardner); Coulsdon, 1944 (Wheeler); Chertsey Meads, September 1949 (Bretherton); Oxshott (Cockayne); Wimbledon Common, 1905 (Millward, *Ent. Rec.*, 1907, 19: 90); Weybridge (Messenger).

**Tiliacea aurago* Fabr. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Barred Sallow is on the whole a much more local species than the last, being confined to beech and maple usually in chalky districts.

It appears at the end of September and seems to occur over England up to the northern counties. It has been only recorded by the 1898 list and Suppt. from Finchley and the south-eastern suburbs. Other records include

MIDDLESEX. Mill Hill, Hampstead and Harefield (Cockerell, *Lep. Middx.*, 1891); Stanmore, one, October 2, 1953 (Lorimer); Hounslow, two in 1954 (Pierce); Ruislip (Minnion).

HERTS. Bricket Wood, Broxbourne and Watford (Foster, *Lep. Herts.*, 1937).

ESSEX. Loughton (Sutton); Epping and Brentwood (V.C.H., 1903).

KENT. Lee (West, *Ent. Rec.*, 1906); West Wickham (Trundell); Orpington, 1948 and 1953 (Siggs); Otford, 1955 (W. Manley).

SURREY. Tooting Bec, one on October 10, 1947 (Christie); Worcester Park, one in 1902 (Kaye); Addington, two (Birchenough); Chipstead, three in October, 1946 (Johnson); Mickleham (Cockayne); Weybridge, three in 1953, one in 1954 (Messenger).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Citria lutea* Stroem. M.21, H.20, E2.18, [E1.19], K.16, S.17.

The Pink-barred Sallow is a very prevalent autumn insect with its range extending well into the Highlands. In the 1898 list and Suppt. it is reported from Forest Gate, Woolwich, Dulwich, Shirley, Tooting, Wimbledon Common, Barnes, Highgate, Hampstead, Winchmore Hill and Muswell Hill.

MIDDLESEX. Stanmore (Fletcher); Enfield (Edelsten).

HERTS. Bricket Wood, Cheshunt, Oxhey, Watford, St. Albans, Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. Eynsford, 1947 (Hyatt); Grove Park (D. Owen); Hayes, West Wickham (Birchenough, Trundell); Pett's Wood (A. Swain).

SURREY. Wimbledon Common (Craske); Chipstead, a few in 1946 (Johnson); Putney, 1949 and 1933 (D. King); Weybridge (Messenger); Esher (C. de W.).

**Cirrhia icteritia* Hufn. (= *fulvago* Linn.). M.21, H.20, E2.18, [E1.19], K.16, S.17.

The Common Sallow, as its name implies, is by far the most prevalent of this group, being found all over the British Isles, even to the north of the Highlands, where it appears in early August, while in the south, September is the normal month. It is very variable and is often seen as a pale yellow form without dark markings (*flavescens*). It is found all over the London Area according to the 1898 list and Suppt., being reported from Hampstead, Highgate, Hammersmith, Ealing and Finchley. It is noted from almost every quarter of the outlying districts.

**Cirrhia gilvago* Esp. M.21, H.20, E2.18, K.16, S.17.

The Dusky-lemon Sallow only seems to occur where its chief pabulum the wych elm grows, as it seldom seems to affect the ordinary elm. Sometimes it can be found sitting about after dark in numbers in late

September near its foodplant. It occurs sporadically over England to Yorkshire. It is noted in the 1898 list and Suppt. from a good many localities in the London region, from Walthamstow, Ilford, Norwood, Tooting, Hanwell, Highgate, Finchley, Winchmore Hill, and from

MIDDLESEX. Enfield (Edelsten); Feltham, September 1954 (Classey); Twickenham, 1893 (Meldola: Hope Dept. Collection, Oxford); Stanmore (Fletcher); Mill Hill and Harefield, two in 1889 (Cockerell, *Lep. Middx.*, 1891).

HERTS. Bricket Wood, St. Albans, Haileybury, East Barnet, Oxhey Wood, Watford, Broxbourne and Waltham Cross (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (*Entom.*, 1871, 5: 420).

KENT. Pett's Wood, 1949 (A. Swain); Westerham (C. Edwards); West Wickham, one in 1947 (Birchenough).

SURREY. Ewell, 1934 (Tunstall); Chipstead, several in 1946 (Johnson); Egham, numerous (C. de W.); Chertsey Meads, one in September 1948 (Bretherton); Wimbledon Common and Kingston Hill (V.C.H., 1902); Weybridge, one in 1938 and another in 1949 (Messenger).

**Cirrhia ocellaris* Borkh. M.21, K.16, S.17.

The Pale-lemon Sallow holds an important place in the annals of London moths, since its original discovery in the British Isles was made on Wimbledon Common on September 27, 1893, by E. H. Taylor. Shortly afterwards it was taken at Dulwich (T. B. Fletcher, *Entom.*, 1895, 27: 132). It appeared for many years in the Thames Valley as far as Chertsey, where it was rediscovered in September 1949 with two specimens (Bretherton). Its main stronghold seems to be in the eastern counties, chiefly in Suffolk, where large poplars flourish. Other records in the London Area include

MIDDLESEX. Twickenham (*E.M.M.*, 1894, 30: 161), also near Sunbury.

KENT. Sidcup (Kidner, *Entom.*, 1923, 55: 114); Bexley (V.C.H., 1908).

SURREY. Richmond (*E.M.M.*, 1896, 32: 18); Weybridge, one on October 11, 1952 (Messenger); several near there in 1954 (Cole).

**Jodia croceago* Fabr. M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Orange Upperwing is one of the most striking of the autumn species, though it is very seldom seen at this time of year. It apparently goes into hibernation immediately on emerging in the autumn and reappears in the spring at the sallow bloom, whence a captured female usually lays freely on dead oak leaves. The species seems to affect scrub oak plantations in many parts of southern England up to North Wales, but it is always very local. There are only a handful of records for the London Area, the 1898 list only mentioning it from Eltham and Dulwich. Elsewhere from

MIDDLESEX. Two on Old Oak Common in 1875 (Cockerell, *Lep. Middx.*, 1891).

HERTS. Hertford (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest and Brentwood (V.C.H., 1903).

KENT. Darenth (*Ent. Annual*, 1867).

SURREY. Clapham and Croydon (*Ent. Annual*, 1868); Sanderstead (*Ent. Annual*, 1865); Reigate (V.C.H., 1902); Caterham, 1927 (J. Bell).

BUCKS. Black Park, Fulmer, taken by Samuel Stevens in 1844 (V.C.H., 1905).

Conistra erythrocephala Fabr. (H.20), (K.16).

This very rare visitor, the Red-headed Chestnut, is of very uncertain occurrence in any part of the south-east of England and the eastern counties. It has usually been taken as late in the season as the end of November and even in December. Occasionally it has appeared after hibernation on sallow bloom in April. There appear to be only two occasions when it has honoured the London Area, once at St. Albans (Knaggs, *Ent. Annual*, 1866, 139) and on another occasion at Darenth Wood on October 28, 1872 (G. Bird, *Entom.*, 1872, 6: 264).

**Conistra vaccinii* Linn. M.21, H.20, E2.18, E1.19, K.16, S.17.

The Common Chestnut is one of the most plentiful of the autumn moths, appearing not usually before October and reappearing often in quantity in the spring after hibernation. It has been recorded from nearly all over the British Isles as well as the London Area, being taken in all the surrounding suburbs such as Highgate and Ealing, though not noted in the centre of the Metropolis. It is extremely variable in ground-colour from dark brown to pale ochreous.

**Conistra ligula* Fabr. M.21, H.20, E2.18, K.16, S.17.

The Dark Chestnut is one of the latest of the autumn noctuids to appear. It is not often seen before well on into October when it is a frequent visitor to ivy. It occurs all over England up to the northern counties, but, unlike the preceding species, it is seldom seen in the new year after late February. In the London region it is reported in the 1898 list and Suppt. from Hanwell, Finchley, Harrow, Hale End, Chingford, Hackney Marshes, Ealing, Highgate, Muswell Hill, Southgate, Winchmore Hill, Dulwich, Sydenham and Wimbledon. Also from

MIDDLESEX. Mill Hill and Harefield (Cockerell, *Lep. Middx.*, 1891); Enfield (Edelsten); Southall, 1950 (J. Ward); Ruislip (Minnion).

HERTS. Totteridge, a few (Lorimer); Watford, one only (Penrose); Haileybury, Oxhey, Bushey Heath, Cheshunt, Aldenham and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Loughton (Sutton).

KENT. Lee (West, *Ent. Rec.*, 1906); Pett's Wood, 1948 (A. Swain); West Wickham, Hayes (Trundell, Birchenough).

SURREY. Coulsdon, 1944 (Wheeler); Chipstead, common in 1946 (Johnson); Weybridge (Messenger).

Dasycampa rubiginea Fabr. S.17.

The Dotted Chestnut is seldom seen till the second half of October, and after hibernation it is a fairly frequent visitor to sallow bloom

in April in its very restricted range, which mainly comprises the Bagshot Sand area of Surrey and Berkshire, the New Forest and fringe of Dorset, North Somerset and South Devon. Even in these regions it is sometimes very scarce. It is not recorded in the 1898 list and has only been seen in the London Area in

SURREY. Surbiton (*Ent. Annual*, 1866); Tadworth, one on March 13, 1951 (Wheeler); Mickleham, Boxhill and Reigate (V.C.H., 1902); Weybridge, rare, four 1951 to 1953 (Messenger); Egham, a few (C. de W.).

**Eupsilia transversa* Hufn. (= *satellitica* Linn.). M.21, H.20, E2.18, E1.19, K.16, S.17.

The Satellite is another common member of this autumn group. It ranges all over the country up to northern Scotland and has been taken in most parts of the London region, being mentioned in the 1898 list from as near the City as Hampstead, Highgate, Hammersmith and Ealing, also from Tooting and Wimbledon Common. In the more outlying districts it is very generally distributed, a melanic example being taken at Buckhurst Hill (Lorimer).

**Lithophane semibrunnea* Haw. M.21, K.16, S.17, B.24.

The Tawny Pinion is always considered one of the aristocrats of the autumn noctuids, since it is never of frequent occurrence. It appears in late October when it is a visitor to ivy and again to sallow in the spring. It mainly ranges over the southern half of England and has only been recorded in the 1898 list from Hackney Marshes. Elsewhere from

MIDDLESEX. Mill Hill, Harrow and Ealing (Cockerell, *Lep. Middx.*, 1891); Ruislip (Minnion).

KENT. Pinden near Dartford, one (Hare); Erith and Dartford (V.C.H., 1908).

SURREY. Sutton, April 1939 (Cole); Chipstead, one in October, 1946 (Johnson); Ashted, 1953 (Greenhill); Addington, 1950 (Wild); Egham, most years (C. de W.); Weybridge, one in 1954 (Messenger); Kingston. Reigate and Molesey (V.C.H., 1902).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

Lithophane socia Rott. M.21, S.17.

The Pale Pinion is on the whole more widespread than the last species, being found over England to the Lake District, and it is quite common in Ireland. It is mainly a western species. It can only be included in the London Area with two records from Caterham (Wolti) and from Harrow (Bonhote and Rothschild, 1895).

Graptolitha lamda Fabr. (M.21), (K.16).

This most handsome insect, the Nonconformist, is one of the greatest rarities among our lepidoptera. It is essentially a northern European species with its larva feeding on sweet gale in Denmark, where it is quite common. Probably less than ten have ever been recorded for

the British Isles. Four of these seem to have found their way into the London Area. According to South (ii, 31) the first British record was in North London in October, 1865, with another found on the bole of a willow tree near New Cross on September 30, 1866 (*Ent. Annual*, 1867). On October 3, 1870, a specimen was found at rest on a tree in Darenth Wood near Dartford (J. More, *Entom.*, 1870, 5: 204), while another was taken near Erith in September, 1875.

**Graptolitha ornitopus* Hufn. M.21, H.20, K.16, S.17, B.24.

The Grey Shoulder-knot is sometimes a familiar insect at rest in the autumn and again in the spring, but it is distinctly local, though being widely distributed over England to southern Scotland. It is uncommon in the London Area, being only noted in the 1898 list from Hammersmith and Winchmore Hill. Other records include

HERTS. Totteridge, two (Lorimer); Haileybury, Hertford and Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. Pett's Wood, 1948 (Hyatt); Keston and Hayes (D. Owen), also in 1949 (A. Swain); West Wickham (V.C.H., 1908).

SURREY. Weybridge, one on March 23, 1953 (Messenger).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

(*Lithomoia soliduginis* Hübn.) (M.21.)

This well-known northern species, the Golden-rod Brindle, is one of the most unexpected to occur in the London Area. Two were taken at Feltham in late August, 1954 (Classey). They were part of a large immigration, apparently of a dark form from North Germany, which swept the east and south-east of England. Normally the species ranges from Scotland to North Wales and as far south as Derbyshire. It has only been seen further south very occasionally.

**Xylocampa areola* Esp. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Early Grey is one of the first noctuids to appear, excluding the hibernators. It is usually out by the middle of March, is a common visitor to sallow, and is equally often seen at rest on fences. It is widespread over the southern part of Britain and also in Ireland. In the London region it has been noted from almost all parts, including the Zoo in 1954 (Bushby), also recorded from Hampstead Heath and Highgate.

**Xylena exsoleta* Linn. M.21, H.20, E2.18, K.16, S.17, B.24.

This fine insect, the Sword Grass, is much more familiar in the north than in the southern part of the British Isles, where it is quite a rarity, occasionally appearing in the late autumn and again in April. It has been noted in the 1898 list and Suppt. from Tottenham, Sydenham, Southgate and Wanstead. Elsewhere from

MIDDLESEX. Hampstead, Harrow, Isleworth and Harefield (Cockerell, *Lep. Middx.*, 1891).

HERTS. Totteridge, once on October 2, 1947 (Lorimer); St. Albans, Haileybury, Oxhey Wood, Chorley Wood, Cheshunt, Bricket Wood (Foster, *Lep. Herts.*, 1937).

SURREY. Dulwich Wood, once (Welti); Wimbledon and Reigate (V.C.H., 1902); three at Warlingham, 1929 (J. Bell).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Xylena vetusta* Hübn. I.L., M.21, H.20, E2.18, K.16, S.17.

The Red Sword-Grass is somewhat similar in appearance to the last species, but is distinctly redder and the black streaks at the apex of the forewings are longer. It is also essentially a northern insect, but is often seen in the south. In the London region it has been recorded in the 1898 list from Sydenham, Tooting and Wimbledon Common, also from

INNER LONDON. Westbourne Terrace (Cockayne).

MIDDLESEX. Mill Hill at sugar (Cockerell, *Lep. Middx.*, 1891).

HERTS. Bricket Wood, Hoddesdon and St. Albans (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (V.C.H., 1903).

KENT. Dartford (V.C.H., 1908).

SURREY. Wimbledon and Reigate (V.C.H., 1902); twice at Egham, in 1932 and 1934 (C. de W.).

The next group comprises the Cuculliinae, usually known as the Shark moths. One of their main characteristics in common is their brightly-coloured larvae which rely on this quality for protection. Of the ten species on the British list seven have been recorded in the London Area.

**Cucullia verbasci* Linn. M.21, H.20, [E2.18], K.16, S.17.

The Mullein Shark is far more often seen in nature as its larva, which feeds in companies on most of the mullein family. The moth which emerges in May comes to light occasionally and is found all over the southern part of England. In the London region the 1898 list mentions it from Finchley, Eltham, Plumstead and Croydon. Also from

MIDDLESEX. Enfield (Edelsten); Harefield, larvae common (Cockerell, *Lep. Middx.*, 1891).

HERTS. Generally distributed (Foster, *Lep. Herts.*, 1937).

KENT. Greenhithe (D. Owen); Greenwich Park, one larva in June 1949 (J. Burton); Kidbrooke and Lee (West, *Ent. Rec.*, 1906); larvae at Downe (Birchenough); Shoreham, 1950 (Siggs); West Wickham, 1950-53 (Trundell); Lullingstone (Siggs); Pett's Wood (A. Swain).

SURREY. Coulsdon, 1942 and 1947 (Wheeler); Ashted, larvae 1953 (Chapman); Leatherhead, larvae 1938 (C. de W.).

Cucullia lychnitis Ramb. S.17.

The Striped Lychnis Shark is very similar to the last, but only appears in June, while the larvae seem to feed exclusively on the black mullein (*Verbascum nigrum*). It is much more local, being found chiefly in Sussex, Surrey, Hants, Wilts, Oxon, Norfolk and Suffolk. The only records for the London region are for SURREY, from Banstead, a speci-

men at mercury vapour light in 1953 (Gardner), and from Box Hill (West, *Ent. Rec.*, 1906), also from Reigate (V.C.H., 1902).

**Cucullia asteris* Schiff. K.16, S.17.

The Starwort Shark is again best known in the larval state, for its caterpillar with brilliant yellow stripes on a green ground is often seen feeding in August on golden-rod in woods or on sea aster on salt marshes in the eastern and south-eastern counties of England. The 1898 list gives it from Shooter's Hill and Croydon, where the larvae were said to be common at the end of last century. Other records from

KENT. Westerham (C. Edwards); Bexley, Dartford, Eltham and West Wickham (V.C.H., 1908).

SURREY. Weybridge, one on June 28, 1952 (Messenger).

**Cucullia umbratica* Linn. M.21, H.20, E2.18, K.16, S.17.

The Common Shark, unlike most of its related species, is seldom met with as a larva, but most frequently seen as a moth which comes freely to light and flies at dusk over flowers. It is widespread in the British Isles, the Scottish form being of a bluer-grey than that from the south. In the London Area it seems quite common, being noted in the 1898 list and Suppt. from Finchley, Clapton, Ilford, Crouch End, Lee, Grove Park, Forest Hill, Hampstead, Highgate Woods, Chiswick and Hammersmith. Other records include

MIDDLESEX. Harefield (Cockerell, *Lep. Middx.*, 1891); Enfield (Edelsten); Ruislip (Minnion); Greenford, 1946 (J. Ward).

HERTS. Totteridge, one (Lorimer); Haileybury, Hoddesdon, East Barnet, Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. Kidbrooke Park, June 6, 1947 (Hyatt); Beckenham, 1920 (Keywood); Orpington, 1953 (Siggs); West Wickham, Hayes and Downe (Trundell); Bexley and Dartford (V.C.H., 1908).

SURREY. Chipstead, one in June 1946 (Johnson); Weybridge (Messenger); Kingston Hill and Leatherhead (V.C.H., 1902).

**Cucullia chamomillae* Schiff. I.L., M.21, H.20, E2.18, K.16, S.17.

The Chamomile Shark is very similar in appearance to the last species, but comes out much earlier, in late April and May. It is often to be seen at rest on posts or as a larva curled up in the head of may-weed flowers. It occurs all over England up to the Highlands and in Ireland. In the London Area it has been reported in the 1898 list and Suppt. from Ilford, Hale End, Eltham, Blackheath, Forest Hill, Chiswick, Hampstead Heath and Wimbledon Common. Elsewhere from

INNER LONDON. The Zoo, Regent's Park in 1954 (Bushby).

MIDDLESEX. Hampton, April 22, 1933 (Keywood); Highgate, May 1926 (Andrewes); Enfield (Edelsten); Feltham, May 1955 (Classey).

HERTS. St. Albans, Haileybury, Hoddesdon, East Barnet and Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. West Wickham, several larvae (Birchenough); Westerham (C. Edwards); Greenwich Park (West, *Ent. Rec.*, 1906); Bexley and Dartford (V.C.H., 1908).

SURREY. Norbiton, 1891 (Geldart: Hope Dept. Collecton, Oxford); Putney, May 21, 1928 (D. King); Weybridge (Messenger); Croydon and Wimbledon (V.C.H., 1902).

Cucullia gnaphalii Hübn. (K.16.)

The Cudweed Shark is by far the rarest of this group, being mainly found in Kent, Sussex, Surrey, Hants and Essex. The larva is sometimes to be seen in August on the heads of golden-rod in its restricted haunts, but the only records which seem to come within the London Area are old ones from KENT, notably from West Wickham (*Ent. Annual*, 1867); Darenth Wood in the 1870's, also Greenhithe and Dartford (V.C.H., 1908).

Cucullia absinthii Linn. I.L., M.21, H.20, E2.18, K.16, S.17.

The Wormwood Shark, as mentioned in the Introduction, is a remarkable newcomer to the London Area. Until about the last ten years it was a denizen of the West Country, inhabiting Portland, then ranging westwards round the coast to South Wales and also to North Wales. Recently it has appeared commonly in Birmingham and near Chesterfield, where large numbers of larvae have been found on *Artemisia absinthium* and latterly on *A. vulgaris*. It has also reappeared in Suffolk. It seems to have first been noted in the London region in 1948 when a specimen was taken at Buckhurst Hill on July 24 (Lorimer). Since then it has become increasingly common.

INNER LONDON. Five taken in the light-trap at the Zoo in 1954 (Bushby).

MIDDLESEX. Feltham, several in 1954 (Classey); one larva in Chiswick in July, 1954, bred out in 1955 (Uffen).

ESSEX. Newbury Park, Ilford, a specimen taken on June 22, 1949 (Ness, *Essex Naturalist*, 28: 211).

HERTS. Totteridge, one on July 29, 1951, and ten in July 1954 (Lorimer).

KENT. Pett's Wood, 1950 (A. Swain); Pinden, three in all, in July 1951, 1952 and 1953 (Hare); Otford, three, 1955 (W. Manley).

SURREY. Weybridge, one on July 23, 1954, and four in July 1955 (Messenger); Putney, one on July 15, 1955 (H. Swain); Worcester Park, twelve seen and six caught at the end of July 1955 (Darling, *Entom.*, 1955, 88: 284).

The next group of moths consists of the Small Yellow Underwings and the Bordered Straws, all somewhat brightly coloured. Most of the species are day-fliers.

**Anarta myrtilli* Linn. H.20, K.16, S.17, B.24.

This very swift-flying little insect, the Beautiful Yellow Underwing, is essentially an inhabitant of moorlands and heaths throughout the British Isles, where it flies readily in the sunshine. It occurs on most of the heathlands round London, especially on the south side. The 1898 list only mentions Shirley and Abbey Wood. Other records include

HERTS. Wormley, 1899 (Edelsten: Foster, *Lep. Herts.*, 1937).

KENT. Woolwich Survey; Hayes, very common in 1946 (Hyatt); Dartford Heath, Hayes (D. Owen).

SURREY. Cheam, common on heather (Menzies); Addington Hills, 1950 (Birchenough); Fairmile Common, 1953 (Greenhill); Oxshott (Cockayne); Wimbledon Common, 1928 (D. King).

BUCKS. Black Park, Fulmer (V.C.H., 1905).

**Panemeria tenebrata* Scop. M.21, H.20, E2.18, K.16, S.17.

The Small Yellow Underwing is almost our most diminutive noctuid. It is often quite common flying in sunshine in May in grassland and rough herbage in most parts of England up to the north and also in some areas of Ireland. It is well established in the London Area. The 1898 list and Suppt. give it from Chingford, Walthamstow, Hale End, Finchley, Harrow, Southall, Ealing, Willesden, Mill Hill, Dulwich, Streatham and Wimbledon Commons, also from

MIDDLESEX. Hampton, 1931 (Keywood); Highgate (Andrewes); Mill Hill (Cockayne); Harefield, June 1951 (J. Ward); Enfield (Edelsten); Bishop's Wood, Hampstead (Cockerell, *Lep. Middx.*, 1891).

HERTS. Watford, common (Penrose).

KENT. Sundridge Park, May 1947 (Hyatt); Hayes, Joyden's Wood and Elmstead Woods (D. Owen); Pett's Wood, 1947 (A. Swain); Downe (Birchenough); Kidbrooke Park (West, *Ent. Rec.*, 1906).

SURREY. Epsom, 1933 (D. King); Wimbledon Common, numerous in 1928 (D. King); Egham, 1933 (C. de W.); Weybridge, one on May 22, 1937 (Messenger); Kingston and Surbiton (V.C.H., 1902).

(*Periphanes delphinii* Linn.) (I.L.), (M.21).

This lovely insect, the Pease Blossom, is one of our greatest rarities and it is noteworthy that out of the very few authentic British records no less than three come from London and its surroundings. There is a historic specimen in the National Collection at the British Museum (Natural History) taken by W. Jones near the Physic Garden at Chelsea in 1799 (Boyd, *E.M.M.*, 1903, **39**: 281, also *Proc. Ent. Soc. London*, 1913, **71**).

Yet another old specimen is in the Hope Dept. Collection at Oxford, labelled "flying over clover at Harrow in August, 1835", while a third example was reported from Norfolk Crescent in the West End (*Entom.*, 1870, **5**: 228). The species was figured by Wilkes as far back as 1773, but there appear to be no modern records of the insect.

Pyrrhia umbra Hufn. M.21, H.20, K.16, S.17.

The Bordered Sallow is a fairly local insect always associated with its foodplant, the rest harrow (*Ononis*) on which its larvae may often be found in quantity in August. It occurs all over England up to the Highlands and in Ireland. It has been recorded from many parts of the London Area, but does not appear in the 1898 list. It has been noted from

MIDDLESEX. Stanmore, one (Lorimer); Feltham, 1954 (Classey).

HERTS. Watford, one only (Penrose); Totteridge, one (Lorimer); East Barnet (Foster, *Lep. Herts.*, 1937).

KENT. Westerham (C. Edwards); Pinden, a few (Hare); Lee (V.C.H., 1908); Otford, 1955 (W. Manley).

SURREY. Tulse Hill, July 31, 1946 (Canon Edwards); Ewell, 1933 and 1950 (Tunstall); South Croydon (Wild); East Sheen, August 2, 1931 (D. King); Ashted (Greenhill); Tadworth (Wheeler); Weybridge, a few (Messenger); Reigate (V.C.H., 1902).

Heliothis dipsacea Linn. M.21. S.17.

The Marbled Clover is sometimes seen in numbers flying swiftly over rough pastures in June and July in bright sunshine. It occasionally comes to light and seems confined to the eastern and south-eastern counties of England. There are only a very few records for the Area.

MIDDLESEX. Bedfont, one at mercury vapour light on August 3, 1951. and another on July 21, 1952 (Kindred).

SURREY. Croydon (West, *Ent. Rec.*, 1906).

Heliothis maritima Graslin S.17.

This insect, now known as the Fulvous Clover, was only recognised as a separate species in 1938. It had previously been confused with *H. dipsacea* from which it can be readily distinguished by the more oblique cross-band on the forewing and the generally darker coloration. It also affects a different environment, occurring in marshy spots on heaths where it flies freely in the sunshine in July. It appears to exist in only a few of the southern counties, chiefly in Surrey, Sussex, Hants and Dorset. The only apparent record which the London Area can claim to date is a specimen taken just outside the boundary, at Egham, on July 18, 1933 (C. de W.). The insect is common on most of the Surrey heaths.

**Heliothis peltigera* Schiff. I.L., M.21, K.16, S.17.

The Bordered Straw is a noted migrant which seems to breed in this country almost every year, since its larvae can be obtained freely at Dungeness and on the Crumbles near Eastbourne feeding on *Senecio viscosus* in the late summer. The moth too has been taken in southern England and Ireland on many occasions. For the London Area the 1898 list only gives Clapton and a specimen taken at Sydenham in 1891 (*Ent. Rec.*, 1891, **2**: 291). Other records are from

INNER LONDON. One flew into a restaurant near Piccadilly Circus on March 8, 1952 (*Ent. Gazette*, 1952, **3**: 125).

MIDDLESEX. Kenton, one bred in August 1945 (Adams: *Entom.*, 1946, **79**: 79).

KENT. Pinden, a few (Hare); Lee (V.C.H., 1908).

SURREY. Purley, one on August 12, 1945 (Bliss, *Entom.*, 1945, **78**: 144); one on Wimbledon Common, on July 18, 1945 (Riley: *id.*); also near Dulwich, one on July 23, 1945, and on July 27, 1946 (O'Farrell, *Entom.*, 1946, **79**: 256).

Heliothis armigera Hübn. (M.21), (K.16), (E2.18), (S.17).

The Scarce Bordered Straw is another notorious migrant which in many parts of the world is a serious pest in the larval state, especially on tomatoes. The larva has often been found in the imported fruit. The moth has been taken in many parts of the south of England and occasionally in the London region, quite often in the autumn. The records are for

MIDDLESEX. Highgate, October 1908 (Andrewes); larvae in tomatoes at Twickenham, January 1950 (Stallwood); Edmonton, 1859 (South, ii, 52).

ESSEX. Epping Forest (Buxton, 1890).

KENT. Bexley, on June 21, 1922 (Mactaggart, *Entom.*, 1922, 55: 188).

SURREY. Tooting Bec, one on October 10, 1947, at light (Christie).

The next group of Moths, the Eustrotiinae, are all small insects most of which are day-fliers.

**Acontia luctuosa* Esp. M.21, H.20, K.16, S.17.

The Four Spotted is a pretty insect which is chiefly prevalent in chalky districts in the south and east of England. It is mainly a sunshine flier, but is occasionally seen at light. Croydon and Lee are the only localities for it mentioned in the 1898 list.

MIDDLESEX. Stanmore, one in July 1953 (Lorimer); Ruislip, rare (Minnion); common at m/v light at Bedfont (Kindred).

HERTS. Hertford and Hoddesdon (Foster, *Lep. Herts.*, 1937).

KENT. Plumstead, 1947 (Rigden); Abbey Wood, 1952 (Showler); Pett's Wood (A. Swain); West Wickham (Trundell); Joyden's Wood and Eynsford (D. Owen); Dartford (Meldola: Hope Dept. Collection, Oxford).

SURREY. Addington (Birchenough); Caterham (West, *Ent. Rec.*, 1906); Coulsdon, one in 1948 (Wheeler); Epsom, 1929 to 1934 (D. King); Weybridge, rare (Messenger).

Eublemma parva Hübn. (S.17).

The Small Marbled is a minute noctuid with a very wide range in subtropical regions, but only a very rare visitor to our shores. In late May 1953 a remarkable immigration of this little insect reached this country. About fifty captures were made in all, mostly along the South Coast, though some were taken well inland. These doubtless bred in this country for one found its way into the London Area in that summer. A specimen was taken on a fence in Dulwich on August 17, 1953, by Canon Edwards (*Ent. Rec.*, 1953, 65: 292).

Jaspidia deceptor Scop. (S.17).

This insect is one of the new additions to the British list in recent years, having first been taken in June 1948 near Ashford, Kent, by Mr. Austin Richardson. It has been named the Pretty Marbled. Since the time of its discovery some eight further specimens have been recorded, one of which was taken in June 1952 just inside the boundary of the

London Area at Reigate (Rudland). It would appear that the species was trying to establish itself as a resident.

**Jaspidia pygarga* Hufn. M.21, H.20, E2.18, K.16, S.17.

The Marbled White-spot is often a very common species at the end of June in most parts of southern England ranging up to the north midlands. The 1898 list give it from Wanstead Flats, Forest Hill, Highgate Woods and Richmond Park. Later records include

MIDDLESEX. Stanmore, one (Lorimer); Feltham, 1954 (Classey).

HERTS. Bricket Wood and Haileybury (Foster, *Lep. Herts.*, 1937).

KENT. Pett's Wood, 1953 (A. Swain); Keston, a few in 1952 (Birch-enough).

SURREY. Ashtead, 1938 (Tunstall); Oxshott (Cockayne); Esher (Gardner); Tadworth, June 1952 (Wheeler); Ashtead, 1953 (Greenhill); Weybridge (Messenger).

Eustrotia uncula Clerck S.17.

The Silver Hook is another small insect which is wont to be very active by day in marshy ground on heaths and moorlands in many parts of the country, being quite common in the Highlands and in Ireland. It appears in late June and is never easy to take on the wing. It is not included in the 1898 list and has only been recorded for the Area from

SURREY. Richmond Park, Penn Ponds (P. Richards, *Entom.*, 1908, 41: 19); West End, Esher (Cockayne); Esher (Gardner); Weybridge, two in 1952 (Messenger).

Haplotis venustula Hübn. E2.18, E1.19, S.17.

This very pretty little noctuid, the Rosy Marbled, is one of our most local species, being found in probably only three counties, Essex, Sussex and Surrey. It flies freely at dusk among bracken in mid-June. The main records for the Area include

ESSEX. Epping Forest and Loughton (V.C.H., 1903); Brentwood (Edelsten); also there in 1933 (C. de W.).

SURREY. Weybridge, three in July 1951 and one on June 20, 1953 (Messenger).

**Rivula sericealis* Scop. M.21, K.16, S.17.

The Straw Dot is quite a common species in damp areas over most of southern England up to the midlands, but it seems scarce in the London Area and is only included in the 1898 list from Croydon.

MIDDLESEX. Uxbridge and Southall, 1951 and 1952 (J. Ward).

KENT. Orpington, 1948 (Siggs); Pett's Wood and Chelsfield, 1950 (A. Swain).

SURREY. Ashtead, 1953 (Greenhill); Chipstead, one in Sept. 1946 (Johnson); Epsom, 1930 (D. King); Weybridge (Messenger).

Phytometra viridaria Clerck M.21, H.20, E2.18, E1.19, K.16, S.17.

The Small Purple-barred is another species mainly associated with heathland over most of the British Isles up to the Highlands. It flies

by day throughout most of the summer months. It does not appear in the 1898 list, but has been found in many parts of the Area as follows:

MIDDLESEX. Isleworth (Cockerell, *Lep. Middx.*, 1891).

HERTS. Hertford and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Epping Forest (V.C.H., 1903).

KENT. Shoreham, May 1952 (Hyatt); West Wickham, several (Trundell); Pett's Wood, 1950 (A. Swain); Downe (Birchenough); Eynsford, 1950 (A. Swain).

SURREY. Colley Hill, common (Menzies); Juniper Valley, Box Hill (Wheeler); Weybridge, a few (Messenger).

*(*Emmelia trabealis* Scop.). (M.21), (K.16).

The Spotted-sulphur is yet another extremely local insect. Its chief home in this country is the Breck Sand area of Suffolk. Here it appears in June and again in August, but has become very scarce of recent years. Its chief claim to be included in the London Area is on the strength of a few single records. The 1898 list mentions only Hackney Marshes, but it has also been noted from Clapton (*Entom.*, 1870, 5: 173) and from Wandsworth (South, ii, 62). It is also reported from Dartford in Kent (V.C.H., 1908).

**Scoliopteryx libatrix* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

The Herald is one of our most well-known moths which is more often seen in the spring after hibernation than in the autumn when it usually emerges. It is found all over the British Isles, even in the Shetlands and has been noted from every part of the London Area including Ladbroke Square, and Chiswick, also from Bedford Park, Isleworth, Hampstead and Highgate.

The next group comprises the Plusiinae, of which all the species are highly coloured, mainly with golden or silver blotches or Y marks. They are all fast fliers, several are noted migrants and they are all partial to flowers at dusk.

**Polychrisia moneta* Fabr. I.L., M.21, H.20, E2.18 [E1.19], K.16, S.17.

This fine insect, the Golden Plusia, was only added to the British list in 1890, since when it has spread steadily over the British Isles right up to Scotland. Its larvae are sometimes a pest on delphiniums and monkshood in gardens. Like all this genus their presence may be detected by a hanging leaf with the stem almost severed. The bright yellow cocoon is made under one such leaf. In the 1898 list and Suppt. it had already been reported from Woodford, Croydon, Sutton, Hammersmith, Finchley, Wandsworth, Norwood and Sydenham. More recently from

INNER LONDON. The Zoo, Regent's Park in 1953 (Bushby); larvae numerous there (C. de W.).

MIDDLESEX. Highgate (Andrewes); Stanmore (Lorimer); Enfield (Edelsten); Ruislip (Minnion); Greenford and Southall (J. Ward); Hounslow, two in 1954 (Pierce).

ESSEX. Loughton (Sutton).

HERTS. Watford, Bushey Heath, Waltham Cross (Foster, *Lep. Herts.*, 1937); Totteridge (Lorimer).

KENT. Abbey Wood, 1953 (Showler); Beckenham and Purley, 1911 (Keywood); Hayes and West Wickham (Trundell); Orpington (Siggs).

SURREY. Addington (Birchenough); Barnes, Banstead (Gardner); Putney, East Sheen (D. King); Coulsdon, 1947 (Wheeler); Weybridge (Messenger).

**Plusia chrysitis* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17.

This familiar species, the Burnished Brass, is one of the most widespread of this group, inhabiting almost all parts of Great Britain almost to the furthest limits. It is very prevalent in late June and often again in September. It has been noted from nearly every area of the London region and for

INNER LONDON from Battersea Park in 1925 (Baynes), from the Zoo, Regent's Park in 1951 (Bushby), also in Paddington (1898 list).

(*Plusia aurifera* Hubn.) (M.21).

This species, named the Slender Burnished Brass, is chiefly a denizen of tropical regions and has very little claim to be included in the London list, except through a mention in Barrett (vi. 102) that J. F. Stephens had a specimen taken in the London district about the middle of the 19th century. The only recent authentic example of this insect was captured in South Devon in July 1943.

Plusia festucae Linn. M.21, H.20, E2.18, K.16, S.17.

The Gold Spot is by no means always common, though it appeared in abundance as a second generation in September 1955 in most parts of the country. It is often commoner in Scotland than in the south. It is usually associated with marshy places, since its larva feeds on iris as a rule. It is curious that it is not included in the 1898 list. The records include

MIDDLESEX. Stanmore, July 1953 (Lorimer); Feltham, 1954 (Classey); Clapton (Cockerell, *Lep. Middx.*, 1891).

HERTS. Watford, one only (Penrose); Cheshunt Marshes (Edelsten).

ESSEX. Loughton, two in 1935 (Sutton).

KENT. West Wickham, 1950 and 1953 (Trundell); Westerham (C. Edwards); Greenwich (V.C.H., 1908).

SURREY. Wallington, one in 1953 (Collyer); Ewell, August 1947 (Tunstall); Weybridge, common in 1953 and in 1955 (Messenger).

**Plusia iota* Linn. M.21, H.20, E2.18, K.16, S.17.

The Plain Golden Y is a fairly prevalent species in June and July in most parts of the British Isles up to the Highlands, but at times it can be quite rare. The London area seems to harbour it from many parts, since it is reported in the 1898 list and Suppt. from Harrow, Crouch End, Stamford Hill, Chingford, Woodford, Brockley, Croydon, Ealing, Hendon and Highgate. It has also been noted from

MIDDLESEX. Stanmore, a few (Lorimer); Mill Hill, Hampstead

Heath and Harefield (Cockerell, *Lep. Middx.*, 1891); Ruislip, rare (Minnion); Enfield (Edelsten).

HERTS. Totteridge (Lorimer); St. Albans, Haileybury. Hertford, East Barnet, Chorley Wood, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. Anerley, 1905 (Keywood); Westerham (C. Edwards); Chelsfield (A. Swain); Kidbrooke and Lewisham (West, *Ent. Rec.*, 1906); Orpington, 1953 (Siggs); Dartford and Eltham (V.C.H., 1908).

SURREY. Banstead (Gardner); Coulsdon, 1941-42 (Wheeler); Ewell, July 1935 (Tunstall); Weybridge, one in 1954 and one in 1955 (Messenger).

**Plusia pulchrina* Haw. M.21, H.20, K.16, S.17.

The Beautiful Golden Y is somewhat similar in appearance and in habitats to the last species, though in some places it is distinctly scarcer and there do not seem so many records for the London area. The 1898 list and Suppt. only mention Harrow, Chiswick and Highgate Woods.

MIDDLESEX. Stanmore, one in July 1953 (Lorimer); Feltham, 1954 (Classey); Ruislip (Minnion); Enfield (Edelsten); Harefield (Cockerell, *Lep. Middx.*, 1891).

HERTS. Bushey Heath, Haileybury, Hertford, East Barnet, Cheshunt, Chorley Wood, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. Abbey Wood, 1952 (Showler), Plumstead Marshes (Rigden); West Wickham, 1952, Selsdon, 1953 (Birchenough); Westerham (C. Edwards); Dartford and Eltham (V.C.H., 1908).

SURREY. Merton Park (Nott); Chipstead, six in 1946 (Johnson); Coulsdon, June 26, 1946 (Wheeler); Weybridge, sometimes numerous (Messenger).

Plusia ni Hübn. (S.17).

The Ni Moth is one of the foremost migrants on the British list. Though only first recorded in 1868 it has, as the years have passed, become increasingly frequent mainly on the South Coast. It has even penetrated as far as northern England. There appears to be only two authentic records for the London Area to date, all for

SURREY. One was taken by the late Percy Richards at Norbiton in May 1896 (South ii, 71), and another obtained by the late Worsley Wood at East Sheen on September 17, 1922 (*Entom.*, 1924, 57: 68).

**Plusia gamma* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Silver Y is one of our commonest and most well-known moths and one of the most noted migrants, sometimes appearing in swarms on the coast. It has penetrated to every part of the British Isles and also of the London Area. For

INNER LONDON it has been reported from the Zoo, Regent's Park, in 1951 and 1954 (Bushby) and from the City Bombed Sites in 1951 (Wheeler).

**Plusia interrogationis* Linn. (H.20), (M.21), (S.17).

The Scarce Silver Y is essentially an inhabitant of moorlands of the northern part of Great Britain and in Ireland. In this terrain it careers over the heathland in bright sunshine in August. Its appearance in the south of England is most unexpected and the few records of it have been queried as accidental introductions or misidentifications. However, the capture of quite a number of this species in Kent, Essex and elsewhere in the south-east in 1955 have now substantiated that it is a migrant from the Continent as was the case in 1954 with *Lithomoia solidaginis*. Therefore, the few records for the London region can stand as most probably correct. These are one from Ealing in the 1898 list, and

HERTS. Once at Cheshunt (Boyd: Foster, *Lep. Herts.*, 1937).

SURREY. Reigate (V.C.H., 1902).

**Abrostola triplasia* Linn. I.L., M.21, H.20, E2.18, K.16, S.17.

This species, the Dark Spectacle, is readily confused with the next one. They both appear at the same time of year, in June, but this insect is generally less common in most districts and does not penetrate so far north in Scotland. However, there are plenty of records for the London Area, notably from Dalston, Clapton, Lee, Hanwell, Crouch End, and Highbury in the 1898 list and Suppt., where it is quoted as being commoner than the following species. Other records include

INNER LONDON. The Zoo, Regent's Park, 1954 (Bushby).

MIDDLESEX. Hampton, May 1933 (Keywood); Highgate, 1906 and 1935 (Andrewes); Chiswick (Dollman: *Ent. Rec.* 1906, **18**: 145); Ruislip, rare (Minnion); Enfield (Edelsten); Hammersmith, Kentish Town, Tottenham and Isleworth (Cockerell, *Lep. Middx.*, 1891).

HERTS. Totteridge, one (Lorimer); Haileybury, East Barnet, Bushey Heath, Watford, Hoddesdon, Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Forest Gate and Loughton (Sutton); Woodford Green, 1910 (Collenette).

KENT. Chelsfield, 1948 (A. Swain); Dartford Marshes, one on June 8, 1952 (J. Burton); Kidbrooke and Lewisham (West, *Ent. Rec.*, 1906); Lee and Eltham (V.C.H., 1908).

SURREY. Sutton, 1905 (Meldola: Hope Dept. Collection, Oxford); East Sheen, 1929 and 1933 (D. King); Roehampton, May 1892 (Ashley); Weybridge, three in 1954, common in 1955 (Messenger); Esher and Oxshott (V.C.H., 1902); Wandsworth, Tooting Common and Wimbledon, common in 1929 (Hawkins).

**Abrostola tripartita* Hufn. I.L., M.21, H.20, E2.18, K.16, S.17.

The Light Spectacle is as a rule more often seen in most parts of the country than the last species. In the north of England a dark form is usually predominant. The 1898 list and Suppt. mention it from Hanwell, Hale End, Hackney Marshes, Forest Gate, Brockley, Ealing and Ladbroke Square. Other records are

INNER LONDON. The Zoo, Regent's Park in 1951 and 1954 (Bushby).

MIDDLESEX. Highgate (Andrewes); Stanmore, fairly common (Lorimer); Southall, 1949 (J. Ward); Enfield (Edelsten); Ruislip (Minnion); Mill Hill and Harefield (Cockerell, *Lep. Middx.*, 1891).

HERTS. Totteridge, numerous (Lorimer); Watford, common (Penrose); St. Albans, Bricket Wood, Haileybury, Cheshunt, and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Loughton (Sutton).

KENT. Abbey Wood, 1952 (Showler); Orpington, 1953 (Siggs); Hayes and West Wickham (Trundell); Kidbrooke and Lewisham (West, *Ent. Rec.*, 1906); Chelsfield, 1948 (A. Swain); Lee and Eltham (V.C.H., 1908).

SURREY. Chipstead, a few in 1946 (Johnson); Tadworth, 1951 (Wheeler); East Sheen, 1929 and 1933 (D. King); Weybridge (Messenger).

The next sub-Family comprises the Catocalinae which embraces the Red Underwing moths of which only five species have been recorded in Great Britain. They are among the most spectacular of our indigenous species.

**Euclidimera mi* Clerck M.21, H.20, E2.18, E1.19, K.16, S.17.

The Mother Shipton is one of the most familiar of the day-flying noctuids, appearing in May. It occurs all over England up to the fringe of the Highlands. It is very widespread in the London region, being reported from most of the outer suburbs as well as from Hammersmith, Finchley, and Wimbledon Common in the 1898 list and Suppt., also from Epping Forest.

**Ectypa glyphica* Linn. M.21, H.20, E2.18, E1.19, K.16, S.17.

The Burnet Companion has very similar habits to the last species. It occurs right up to the Highlands and also flies in May and June. It has not been so freely reported in the London Area, only from Harrow, Croydon and Southall in the 1898 list and Suppt. Elsewhere from

MIDDLESEX. Harefield, Ruislip and Northolt (J. Ward); Pinner and Harrow Weald (Cockerell, *Lep. Middx.*, 1891).

HERTS. Watford, common (Penrose); Totteridge, fairly plentiful (Lorimer). Generally distributed (Foster, *Lep. Herts.*, 1937).

ESSEX. Brentwood (Edelsten); Epping Forest (V.C.H., 1903).

KENT. Sundridge Park, May 22, 1947 (Hyatt); Shoreham, 1949 (Siggs); Eynsford, Pett's Wood and Downe (A. Swain); Hayes (Trundell); West Wickham (Birchenough); Brockley (West, *Ent. Rec.*, 1906).

SURREY. Epsom, 1934 (D. King); Bookham (Gardner); Chessington (Stallwood); Coulsdon, 1944 and 1948 (Wheeler).

Minucia lunaris Schiff. (K.16).

Up till 1948 the Lunar Double-stripe was one of the leading rarities on the British list, only some dozen individuals having been noted. In 1942 some larvae were beaten in south-east Kent. Suddenly in 1948 this fine insect itself was found in numbers flying by day among the scrub oak or coming freely to sugar. Larvae were later found in plenty on the young oak shoots. Since then the species has spread to Sussex and Essex, but the London Area had one of the earliest records. A specimen was taken in West Wickham woods on May 27, 1860 (Smith: *Ent Annual*, 1861).

**Catocala fraxini* Linn. (I.L.), (M.21), (H.20), (K.16), (S.17).

The Clifden Nonpareil is in many ways our finest noctuid. It is, indeed, the largest. It has been known some 200 years and has been recorded at intervals all over the British Isles, even in the Orkneys. In 1948 it was discovered to be breeding on aspens in the woods near Ashford in Kent. Since then it has occurred regularly in this district. London has had a fair portion of records of this splendid insect, going as far back as 1842 at Hammersmith (South ii. 78). The 1898 list and Suppt. record captures at Stamford Hill, also in Hyde Park on Sept. 9, 1885 (Potter: *Entom.*, 1885, **18**: 318), another at Sutton on July 18, 1887 (*Entom.*, 1887, **20**: 325), again at Eltham on Sept. 3, 1900 (A. Poore: *Ent. Rec.*, 1900, **12**: 304) and at Norwood on Sept. 10, 1901 (A. Swain: *Ent. Rec.*, 1901, **13**: 333). Other records are

INNER LONDON. One at rest on a tree in Regent's Park on September 9, 1870 (*E.M.M.*, 1871, **7**: 111); one at the London Zoo on September 12, 1871 (*Entom.*, 1871, **5**: 418).

MIDDLESEX. Wood Green on September 9, 1937 (*Entom.*, 1937, **70**: 278); Pinner, one record (Minnion).

HERTS. Hertford (*Entom.*, 1887, **20**: 306); Haileybury, 1887 (Bowyer), also at Waltham Cross (Foster, *Lep. Herts.*, 1937).

KENT. Dartford on July 24, 1920 (Jacques: *Entom.*, 1920, **53**: 210); Farnborough (V.C.H., 1908).

SURREY. Richmond Park, a specimen labelled as taken near White Lodge in 1852, in the collection of C. N. Hawkins; one at Walton-on-Thames on August 8, 1937 (*Entom.*, 1937, **70**: 249).

(*Catocala electa* Borkh.) (M.20), (H.20).

The Rosy Underwing is one of our rarest moths. There are probably not more than five authentic captures to date for this country. Two of these are from the London Area. There is a specimen in the Hope Dept. Collection at Oxford, taken by Capt. Henrici at Hammersmith, but the date is not mentioned, while another was taken at Hoddesdon in

HERTS on September 15, 1927, by D. Molesworth (*Entom.*, 1928, **61**: 139).

**Catocala nupta* Linn. I.L., M.21, H.20, E2.18, E1.19, K.16, S.17, B.24.

The Red Underwing on the other hand is quite the commonest of this genus and another of our most familiar moths. It occurs all over England, becoming progressively rarer in the north. It is very widespread and plentiful in the London region where a melanic form has been taken occasionally. It is found in all the suburbs and outlying districts and has been recorded from

INNER LONDON from Battersea Park in 1925 (Baynes) and from the Zoo, Regent's Park in 1951 and 1954 (Bushby).

*(*Catocala sponsa* Linn.). (E2.18), (K.16), (S.17), (B.24).

This handsome insect, the Dark Crimson Underwing, is mainly an inhabitant of oak woods in the south of England from Dorset to Kent. Some seasons it is very common at sugar in early August. It is quite

a wanderer since a specimen was taken on the shingle at Dungeness and another recently on a tree on the Lancashire coast. Hence its sporadic appearance in the London Area is hardly surprising. The 1898 list gives a record at Blackheath on September 1, 1887 (Dannat: *Entom.*, 1887, 20: 306).

ESSEX. A larva beaten in Hainault Forest (Machin: V.C.H., 1903).

SURREY. Croydon (V.C.H., 1902).

BUCKS. Black Park, Fulmer taken in 1844 by Samuel Stevens (V.C.H., 1905).

(*Catocala promissa* Esp.). (I.L.), (B.24).

The Light Crimson Underwing is more widespread than the last species with which it often occurs, but appears earlier, at the end of July. It occurs well into the southern Midlands. This is another unusual visitor to London, having been recorded from Chelsea (*Ent. Annual*, 1868), also from Black Park, Fulmer by Samuel Stevens in 1844 (V.C.H., 1905).

Lygephila pastinum Treits. K.16, S.17, M.21.

The Blackneck is a somewhat local species, sometimes flying in abundance among its foodplant, the tufted vetch, in large meadows and rough hillsides in many parts of southern England, especially the eastern counties. In the London Area it is not included in the 1898 list, but is recorded for

MIDDLESEX. Ruislip, one only (Minnion).

KENT. West Wickham, one in 1951 (Birchenough); also there (Trundell).

SURREY. Mickleham (Cockayne); Epsom, 1928 (D. King); Box Hill (West, *Ent. Rec.*, 1906); Weybridge, one on July 12, 1953 (Messenger); Reigate (V.C.H., 1902).

In the following sub-Family are the Hypeninae, commonly known as the Snouts. They are a distinctive group, being a definite link between the Noctuids and Geometers. Their larvae are geometer-like, but have extra pairs of pro-legs.

Laspeyria flexula Schiff. M.21, H.20, K.16, S.17, B.24.

The Beautiful Hook-tip is a fairly common species in July over most of the southern counties up to the Midlands. It comes freely to light, while its hairy larvae can often be beaten from lichens on branches. It is another insect not recorded in the 1898 list.

MIDDLESEX. Scratch Wood, one (Lorimer); Uxbridge, 1952 (J. Ward); Ruislip, rare (Minnion).

HERTS. Watford, rare (Penrose); Bushey Heath, Cheshunt, Bricket Wood (Foster, *Lep. Herts.*, 1937).

KENT. Orpington (Siggs); West Wickham, a few (Birchenough).

SURREY. Ashted, 1953 (Greenhill); Chipstead, a few, July 1946 (Johnson); Tadworth, 1952 (Wheeler); Weybridge, common (Messenger).

**Parascotia fuliginaria* Linn. I.L., M.21, E2.18, K.16, S.17.

This secretive little moth, the Waved Black, is a further species which was first taken in London, records going back to the early part of the 19th century. South (ii. 86) mentions Blackfriars Bridge and Chelsea about the 1820's. The characteristic black larvae with orange warts were found feeding on various types of fungus, mainly in old warehouses. About 1905 the moth was discovered in the Camberley district, but it was only some twenty years later that it was found to be widespread all over the Bagshot Sand area. Since then it has spread to other parts of Surrey.

The 1898 list and Suppt. give captures in Upper Thames Street, Bermondsey and Lewisham, all in 1881, with another record from Walthamstow on July 29, 1901, by R. W. Robbins (*Ent. Rec.*, 1901, 13: 306). Other records include

INNER LONDON. Blackfriars on July 16, 1870 (E. Clark. *Entom.*, 5: 172); St. Catherine's Docks on July 18, 1906 (J. Clarke, *Ent. Rec.*, 1906, 18: 268); two at Smithfield in 1895 (*id.*); one in the City on July 12, 1862 (*Ent. Annual*, 1863); one in Fleet Street in 1859 (South, ii, 86).

MIDDLESEX. Feltham, several in 1954 (Classey).

KENT. Deptford and Greenhithe (V.C.H., 1908).

SURREY. Leatherhead, one on August 1, 1953 (Watson); Weybridge, two in July 1953 (Messenger).

**Zanclognatha tarsipennalis* Treits. M.21. H.20, E2.18, E1.19, K.16, S.17.

The Brown Fanfoot is one of the species most often seen of this group. It appears in late June and is found over England up to southern Scotland and in Ireland. It is widely reported from the London region. According to the 1898 list and Suppt. it has been taken at Hanwell, Ealing, Crouch End, Dalston, Sydenham, Dulwich, Richmond Park, Highgate, and is widespread in Epping Forest. Also from

MIDDLESEX. Highgate (Andrewes); Stanmore, common, also in Scratch Wood (Lorimer); Ruislip and Northolt (J. Ward); Enfield (Edelsten).

HERTS. Totteridge (Lorimer); St. Albans, Bushey Heath, East Barnet and Aldenham (Foster. *Lep. Herts.*, 1937).

ESSEX. Epping Forest (Edelsten).

KENT. Anerley, June 1908 (Keywood); West Wickham, 1953 (Trundell).

SURREY. Putney and East Sheen, 1928 and 1953 (D. King); Bantstead (Gardner); Coulsdon and Tadworth, 1949 and 1951 (Wheeler); Weybridge (Messenger); Wimbledon Common (Hawkins).

**Zanclognatha grisealis* Hübn. (= *nemoralis* Fabr.). M.21, H.20, E2.18, E1.19, K.16, S.17.

This species, the Small Fanfoot, has much the same habits and distribution as the last, but is less common in the north. In the London Area it is reported in the 1898 list and Suppt. from Harrow, Hanwell, Highgate, Forest Hill, Dulwich, Croydon, Richmond Park and Epping Forest.

MIDDLESEX. Highgate (Andrewes); Scratch Wood (Lorimer); Ruislip, Northolt and Uxbridge (J. Ward); West Hampstead and Harefield (Cockerell, *Lep. Middx.*, 1891); Enfield (Edelsten).

HERTS. Bricket Wood, East Barnet, Bushey Heath, Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937).

KENT. Abbey Wood, 1952 (Showler); Chislehurst, 1946 (A. Swain); West Wickham and Hayes (Birchenough); also there (Trundell).

SURREY. Barnes and Banstead (Gardner); Richmond Park in 1927 and East Sheen in 1928 (D. King); Tadworth, 1949 and 1952 (Wheeler); Weybridge (Messenger); Wimbledon Common and Richmond (Hawkins).

Zanclognatha cribrumalis Hübn. K.16, S.17.

The Dotted Fanfoot is essentially an inhabitant of marshes within a very restricted range comprising the eastern counties, also Kent, Surrey, Sussex, Hants. and Somerset. The only records that come within the London Area are for Surrey from Nutfield and Redhill (V.C.H., 1902) and for Kent from Dartford and Greenhithe (V.C.H., 1908).

(*Trisateles emortualis* Schiff.) (E2.18).

The Olive Crescent is another of our greatest rarities and it is doubtful if more than half a dozen authentic records have been made. There appear to be two from the London region, one from Epping Forest in June 1859 (South, ii, 88) and another specimen from Loughton in Essex labelled 1870 (Hope Dept. Collection, Oxford).

(*Colobochoyla salicalis* Schiff.) (K.16), (S.17).

The Lesser Belle is an extremely local species. It seems to have disappeared from many of its former haunts and to exist now chiefly in the woods round Ashford in Kent where it was discovered in 1932. It has been found to breed on aspen and not sallow as stated in some of the earlier text books. The insect can be flushed by day in early June and comes freely to light. Most of the early records were from the southern part of the London Area.

KENT. Shooter's Hill Wood in June 1899 (*Ent. Annual*, 1859); Bexley and Charlton about 1834 (South, ii, 89); Darenth Wood and West Wickham (V.C.H., 1908).

SURREY. One taken on a gas lamp by C. G. Barret at Dulwich in 1858 (V.C.H., 1902).

Paracolax derivalis Hübn. K.16.

The Clay Fanfoot is another species with a very restricted range, apparently occurring commonly in woods in south-east Kent in late June and also in a few localities in Sussex and Essex. The only authentic records for the Area are from Joyden's Wood in 1952 (Hyatt) and Otford, 1955 (W. Manley).

**Herminia barbalis* Clerck M.21, H.20, E2.18, K.16, S.17.

The Common Fanfoot is quite a prevalent species occurring chiefly among aspen in many woods in late May throughout the south of

England up to the Midlands. But its appearance in the London Area is scattered. It is noted in the 1898 list only from Highgate Woods, and Sydenham. Elsewhere from

MIDDLESEX. Feltham in 1954 (Classey); Bishop's Wood, Hampstead (Cockerell, *Lep. Middx.*, 1891).

HERTS. Northaw, Hertford and Hoddesdon (Foster, *Lep. Herts.*, 1937); Broxbourne (Edelsten).

ESSEX. Epping Forest (V.C.H., 1903).

KENT. Woolwich Survey.

SURREY. Wimbledon Common in 1939 (Bradley).

Bomolocha fontis Thunb. S.17.

This very pretty species, the Beautiful Snout, is a local insect in places where its foodplant, the bilberry, is in plenty. Here it can be flushed at dusk in late June. It occurs over the southern part of England up to North Wales and in south-west Ireland. There seems to be only one record for the Area from Limpsfield (Cockayne).

**Hypena proboscidalis* Linn. M.21, H.20, E2.18, E1.19, K.16, S.17.

The Common Snout is a very widespread insect all over the British Isles where nettles are in abundance. It appears in June and often again in September. In the Area it is generally distributed, being reported from well towards the centre of the Metropolis, from Hampstead, Chingford, Dulwich, and Wimbledon Common in the 1898 list.

**Hypena rostralis* Linn. M.21, H.20, E2.18, K.16, S.17.

The Buttoned Snout is another common and widespread species, though it is rare in England from the midlands northwards. It feeds on hop and hibernates reappearing in the spring. It has been recorded from most parts of the London Area, from Bedford Park, Westcombe Park, Isleworth in the 1898 list which also reports it as very common in the western regions.

MIDDLESEX Highgate (Andrewes); Southall, 1952 (J. Ward); Enfield (Edelsten); Hampstead, Finchley and Harefield (Cockerell, *Lep. Middx.*, 1891).

HERTS. Bricket Wood, Cheshunt, Bushey, Watford, Hoddesdon (Foster, *Lep. Herts.*, 1937).

KENT. West Wickham (Birchenough).

SURREY. Putney and East Sheen (D. King); Barnes (Gardner); Weybridge (Messenger).

**Schranksia taenialis* Hübn. (= *albistrigalis* Haw.). M.21, H.20, E2.18, K.16, S.17.

The White-line Snout is an elusive little moth which sometimes visits the sugar patch in quantity in July. It occurs over most of southern England up to North Wales, but there are only very few records for the London Area, namely those in the 1898 list from Highgate Woods. It is quoted as not rare in the south-eastern suburbs.

HERTS. Hoddesdon and Broxbourne (Foster, *Lep. Herts.*, 1937).

ESSEX. Brentwood (V.C.H., 1903); Epping Forest (Edelsten).

KENT. Greenhithe and Chislehurst (V.C.H., 1908).

**Schrankia costastrigalis* Steph. E2.18, K.16, S.17.

The Pinion-streaked Snout is another of these small insects which is not often seen, though it ranges over England up to southern Scotland. It mainly occurs in moist ground in the late summer, and sometimes in the early autumn. The 1898 list mentions it from Shirley and the south-eastern suburbs.

ESSEX. Epping Forest (V.C.H., 1903).

KENT. Chislehurst (V.C.H., 1908).

SURREY. Weybridge (Messenger).

Tholomiges turfosalis Wocke. S.17.

This tiny little moth, the Marsh Oblique-barrèd, is often a very plentiful species flying at dusk in damp spots in July in woods and on heaths in many parts of the country up to southern Scotland. It was only added to the British list in 1850. It is not in the 1898 list and the only record comes from Weybridge where three were taken at light in 1953 (Messenger). It is likely to have been overlooked elsewhere.

(*To be continued.*)

Report on Temporary Geological Exposure

KENT.

L.N.H.S./T.E./60/55.

Beckenham, Kent. 1 inch Geological Survey Map (New Series) No. 270 South London. National Grid Reference: 51/379678. In the grounds of the Wellcome Research Laboratories, Langley Court, Beckenham, Kent, about $\frac{1}{2}$ mile N.E. of Eden Park Railway Station. A large, shallow, rectangular excavation for building foundations with trial borings for piles driven to a depth of about 38 feet at each corner.

FORMATIONS ENCOUNTERED:

Lower Eocene; Blackheath Beds, Woolwich and Reading Beds. The surface excavation was in unfossiliferous Blackheath pebble beds to a depth of about 3 feet (with about four inches of soil), but the four trial borings all passed through the following approximate section:

BED.	DETAILS.	Ft.	Ins.
3	Undifferentiated Blackheath pebble beds, say	24	0
2	Blackheath Beds; shell-bed converted into hard sandstone and conglomerate, about	2	0
1	Woolwich and Reading Beds; black clays and fine brown-grey sandstones with occasional bands of crushed shells and fragments of wood, about	12	0
TOTAL DEPTH: about 38 feet.			

PALAEONTOLOGY:

From the cores of the trial borings, four rock samples were collected of bed 2, which probably represents the same horizon as the basal Blackheath shell bed at a similar section near West Wickham, Kent, about 3 miles to the south (Himus & Wood, 1944). The samples contained the following assemblage of fossils, which includes forms characteristic of both the Woolwich and Reading Beds, and the Blackheath Beds.

POLYZOA.

Genus indeterminate, encrusting shell of *Ostrea*.

MOLLUSCA.

LAMELLIBRANCHIATA.

Ostrea bellovacina Lamarck, C; *O. tenera* J. Sowerby, one example only; *Corbicula cordata* (Morris), C; *C. cuneiformis* (Férussac), O.

GASTROPODA.

Tympanonotus funatus (J. Sowerby), C; *Brotia inquinata* (Defrance), C; *Calyptraea* sp. cf. *aperta* (Solander), three specimens; '*Natica*' sp., one example only.

PISCES.

Odontaspis sp., one tooth.

PLANTAE.

Indeterminate fragments, C.

The symbols C and O in the above list denote common and occasional respectively. A number of fossils were also found in the core samples from bed 1, the chief forms being *Ostrea* spp. and *Corbicula* spp.

My thanks are due to the staff of the Geological Department of the British Museum (Natural History) for their assistance in the identification of specimens from the samples collected and to the Director of the Wellcome Research Laboratories, Langley Court, Beckenham, Kent, for permission to publish this report.

REFERENCE.

HIMUS, G. W., and WOOD, A., 1944, A New Section in the Lower London Tertiaries near West Wickham, Kent. *Proc. Geol. Assoc.*, **55**, 21-24.

J. S. HAMPTON.

A Roadside Section in the Upper Chalk near Downe, Kent.

By J. S. HAMPTON.

A SECTION in the *Micraster coranguinum* Zone of the Upper Chalk is situated on the eastern side of the northern end of a cutting, through which passes the Downe-Keston road, $\frac{1}{2}$ mile E.S.E., of Keston Parish Church and $\frac{1}{3}$ mile S.E., of Holwood Farm, near Downe, Kent (Nat. Grid Ref.:—51/427626). Ground level is about 430 feet above O.D.

Dibley (1918, p. 81) stated that, in the Downe area, he had examined sections exposed in the banks of the lanes and had found the zone- and other fossils indicative of the *Micraster coranguinum* zone. As he gave neither geological details nor sections, I have prepared the following description and faunal list on the roadside section mentioned above.

STRATIGRAPHY AND LITHOLOGY.

The face, which is about 13 feet high excluding the sub-soil, shows characteristic *Micraster coranguinum* zone Chalk, which is fairly hard and blocky, but becomes softer and somewhat tabular around and just above the flint layers (6 ins. thick), which occur throughout at intervals of 1 to 3 feet. The Chalk is almost pure white in colour, with small vertical pipes of clay occurring very occasionally. Accurate measurement of the face is impossible as its upper part is inaccessible.

PALAEOLOGY.

The stratigraphical position of the section in the *Micraster coranguinum* zone is proved by the presence of the characteristic echinoid *Micraster coranguinum* (Leske) and by the abundant occurrence of the echinoid *Conulus albogalerus* (Leske). Fossils are fairly common and easy to collect, the better specimens occurring in the softer Chalk around the flint layers, the commonest being echinoderms and brachiopods; polyzoans are found encrusting the tests of echinoids in numbers; the Porifera, Annelida, Anthozoa, Lamellibranchiata and Pisces are also represented but are comparatively rare in occurrence.

A specimen of the crinoid (sea-lily) *Bourgueticrinus*, collected from the section and which appeared to be of an unusual form, was examined by Dr. H. W. Rasmussen of Universitetets Mineralogiske og Geologiske Museum, Copenhagen, when he visited this country in 1954. He agreed that the specimen was an unusual form of *Bourgueticrinus* and considered it to be pathogenic, he also stated that he had seen a similar specimen in the Sedgwick Museum, Cambridge. The Downe specimen is now registered under the number E. 49982 in the collection of the Geological Department of the British Museum (Natural History).

Bourgueticrinus is confined to the Chalk and ranges through the Turonian and Senonian stages in Great Britain. The genus becomes common in the *Holaster planus* zone of the Upper Chalk and dominant in the *Micraster coranguinum* and *Marsupites testudinarius* zones, becoming gradually rarer in occurrence in the succeeding zones. Specimens usually consist of isolated stem-ossicles, but the thecae (cups) occur occasionally.

Some organisms encrusting echinoid tests have uncertain zoological affinities and are registered in the collection of the Geological Department of the British Museum (Natural History) under the numbers H. 4961-2. Their skeletons show some resemblances in structure to sponges and hydrozoans.

In the following faunal list from the section the symbols A, C, O and R denote abundant, common, occasional and rare respectively.

PORIFERA.

Porosphaera globularis (Phillips) O; *Pharetrospongia* sp. R.

COELENTERA.

Parasmilia centralis (Mantell) O; *Parasmilia* sp. R.

ANNELIDA.

Serpula spp. O

POLYZOA.

Berenicea spp. O; *Membranipora* spp. C; *Proboscina* spp. O; *Stomatopora* spp. O.

BRACHIOPODA.

Cretirhynchia sp. R; *Gibbithyris* sp. cf. *ellipsoidalis* Sahni O; *G. pyramidalis* Sahni O; *G. semiglobosa* (J. Sowerby) C;

Concinnithyris sp. cf. *obesa* (J. de C. Sowerby) O; *Terebratulina striata* auctt. angl., non Wahlenberg. R; *Crania* sp. R; *Kingena* sp. R.

ECHINODERMA.

Conulus albogalerus (Leske) A; *Echinocorys scutata* (Leske) A; *Micraster coranguinum* (Leske) C; *Phymosoma* sp. spines R; *Stereocidaris* sp. R; *Tylocidaris* sp. spines O; *Metopaster* sp. O; *Bourgueticrinus ellipticus* (Miller) C; *B.* sp. (pathogenic), E 49982.

MOLLUSCA.

Dimyodon nilssoni (Hagenow) O; *Inoceramus* spp. C; *Ostrea* sp. R; *Spondylus spinosus* (J. Sowerby) O.

PISCES.

Indeterminable fragments only.

The officers of the Geological Department of the British Museum (Natural History) and of the Geological Survey have kindly assisted in the identification of specimens from the section.

REFERENCE.

DIBLEY, G. E., 1918, Additional Notes on the Chalk of the Medway Valley, Gravesend, West Kent, North-East Surrey and Grays (Essex). *Proc. Geol. Assoc.*, **29**, 68-105.

Additions to the Chalk Rock Fauna of Westerham, Kent.

By J. S. HAMPTON.

SINCE the first paper was written, in January 1955 (*L.N.*, **34**, 43-46) further visits to Westerham and laboratory work upon samples have provided a number of additions to the fauna of the pit. Unfortunately it was found, after a visit to the pit during June 1955, that it was being filled in with Chalk débris and that, as a result the Chalk Rock was concealed. It is not known if the owner of the pit intends to fill it completely. As before, the numbers in brackets after species refer to the beds from which they have been recorded and those followed by the symbol CR being characteristic of the Chalk Rock elsewhere. The symbols A, C, O, UC and R denote abundant, common, occasional, uncommon and rare respectively.

THE ADDITIONS INCLUDE:—

FORAMINIFERA. (Provisional determinations by Mr. A. G. Davis, Foraminifera Section, British Museum (Natural History)). The following small assemblage of foraminifera was obtained by treating a 2 lb. sample of Chalk from Bed 4, the "Inoceramus" band, of the pit, in the following manner:

The sample was broken up into a number of small lumps and allowed to soak in water until thoroughly saturated. It was then crushed gently with a pestle and mortar. The material thus obtained was boiled in a dilute solution of household soda. The residue was poured off while still hot and washed under running water three times to remove all traces of the soda. After being dried at a moderate temperature, the sample was sorted with the aid of a binocular microscope, 133 foraminifera being obtained. Of these, 32 appeared to be in a determinable condition, and were submitted for identification to Mr. A. G. Davis, to whom the author is much indebted for his kind assistance. A small number of foraminifera were also obtained from the Chalk Rock before it was concealed and these, too, are listed.

The assemblage is by no means complete and will serve to show only the commoner types of foraminifera to be expected in the *Holaster planus* zone of the Chalk. The commonest forms appear to be species of *Lenticulina*, *Globigerina* and *Textulariella*.

Lenticulina spp. (1 and 4) A; *L. sp. cf. comptoni* (Sowerby) (4) C; *Globigerina* spp. (4) A; *G. cretacea* Reuss (4) O; *Globorotalia* sp. (4) UC; *Globotruncana* sp. cf. *chaldonensis*, but very near *G. ventricosa* White (4) O; ? *Cibicides* sp. (4) UC; *Textularia* spp. (4) O; *Textulariella* spp. (4) C; ? *Ataxogyroidina* sp. (4) R; ? *Ramulina* sp. (4) R; *Bulimina* spp. (4) O; *Lituola* sp. cf. *nautiloidea* (Lamarck) (1) R.

PORIFERA.

Pharetrosporgia struhani Sollas (2) R; *Porochonia simplex* (T. Smith) (1) R, CR.

ANNELIDA.

Rotularia [*Serpula*] *ampullacea* (J. de C. Sowerby) (2) R; *Serpula* sp. cf. *contracta* S. Woodward (2) R; *S. plana* (S. Woodward) (2) O; *S. pusilla* Sowerby (4) R; '*Terebella*' spp., two types (1-5) O.

POLYZOA.

Membranipora sp. (2) R; *Meliceritites* sp. (2) R; *Stomatopora* sp. (2) R.

BRACHIOPODA.

Terebratulina sp. (1) O; *Gibbithyris semiglobosa* (J. Sowerby) (2) O.

ECHINODERMA.

Tylocidaris clavigera (Koenig) (2) R.

MOLLUSCA.

Scaphites geinitzi d'Orbigny (1) O, CR; *Prionocyclus* sp. cf. *hitchinensis* Billingham (1) R, CR; *Cardium* sp. cf. *cenomanense* d'Orbigny (1) R, CR; *Corbis morisoni* Woods (1) R, CR; *Ostrea vesicularis* Lamarck (2) O; cf. *Pleurotomaria* sp. juv. (1) R, CR.

ARTHROPODA. (Identified by Dr. F. W. Anderson, Chief Palaeontologist, Geological Survey and Museum.)

OSTRACODA.

Cytherella obovata Jones and Hinde (1 and 2) C; *Bairdia subdeltoidea* (Münster) (1 and 4) C; *Bythocypris brownei* Jones and Hinde (4), one specimen.

And some encrusting organisms of uncertain zoological affinities.

I am indebted to the officers of the Geological Department of the British Museum (Natural History) and of the Geological Survey for assistance in the identification of specimens from the pit.

The Flies of the London Area

III. TRYPETIDAE

By M. NIBLETT, F.R.E.S.

THE following list of Trypetidae has been compiled from personal records of the last thirty years, to which have been added many supplied by Mr. L. Parmenter; these include his own records and others sent to him by many of the persons mentioned below. I am extremely grateful for this assistance, and my best thanks are offered to all who have helped: Dr. C. H. Andrewes, F.R.S., Messrs. H. W. Andrews, D. A. Bennett, H. Britten, J. Burgess, H. J. Burkill, P. W. E. Currie, R. L. E. Ford, G. C. D. Griffiths, K. M. Guichard, C. O. Hammond, S. N. A. Jacobs, H. Last, A. E. Le Gros, D. Leston, W. O. Steel, R. W. J. Uffen, G. Waller, and R. D. Weal.

Many of the records are from bred insects, but as an endeavour has been made to keep the list as compact as possible no separate references have been made to these, but all emergence times given are derived from breeding the insects, the larvae and pupae of which were kept under as near natural conditions as was possible.

The area under consideration is that covered by the London Natural History Society, this being contained within a circle having a 20-mile radius from St. Paul's Cathedral. The Vice-county numbers have been inserted before each list of localities: these are shown as K16, West Kent; S17, Surrey; E2.18, South Essex; H20, Hertfordshire; M21, Middlesex; I.L., Inner London. With the insects ordinary numbers denote the months, Roman numerals the year.

The nomenclature of flies used is that of Mr. J. E. Collin (1947); for native plants, that of Clapham, Tutin and Warburg (1952).

Of the 73 species of Trypetidae recorded for Britain, 49 have been found in the London Area.

Phagocarpus permundus Harr.: Larvae in fruits of *Cotoneaster* sp. *Crataegus monogyna*, *Pyracantha* sp., 9, 10, pupate in earth, flies emerge II, 5, 6, flies caught 7, 8, 9; K16, Bexley, Erith, Forest Hill; S17,

Bookham Common, Epsom Downs, Herne Hill, Limpsfield Common, Mitcham Common, Thornton Heath; H20, Bricket Wood; M21, Finchley.

Philophylla heraclei L.: Larvae in leaf-mines on various species of Umbelliferae, 6, 7, pupate in earth, flies emerge I, 6, 7, 8, flies caught 4 to 10; K16, Abbey Wood Marshes, Barnhurst, Bexley, Darenth, Dartford, Farningham, Stone Marshes; S17, Addington, Ashtead Common, Banstead Downs, Banstead Wood, Beddington Park, Bookham Common, Coulsdon, Chipstead, Epsom Downs, Farthing Down, Fetcham Downs, Headley, Limpsfield Common, Mitcham Common, Mitchley Wood, Park Downs, Riddlesdown, Selsdon Wood, Streatham, Sutton, Wallington, Wimbledon Common, Worms Heath; I.L., Regents Park.

Platyparea poeciloptera Schrnk.: Larvae in stems of *Asparagus officinalis*, 8 onwards, pupate there, flies emerge II, 6, 7; H.20, Hertford.

Acidia cognata W.: Larvae in mines in leaves of *Petasites fragrans*, *P. hybridus*, *Tussilago farfara*, 9, 10, pupate in earth, flies caught 7, 8, 9; K16, Stone Marshes; S17, Ashtead, Ashtead Common, Bookham Common, Coulsdon, Epsom Common, Mitcham, Nutfield, Riddlesdown.

Rhacochlaena toxoneura Lw.: Food-plant of larvae unknown, flies caught 5, 6; M21, Hampstead Heath.

Spilographa spinifrons Schroeder.: Larvae in leaf-mines on *Solidago virgaurea*, 9, pupate in earth, flies emerge II, 4; K16, Westerham.

Spilographa zoë Mg.: Larvae in leaf-mines on *Chrysanthemum* spp., *Senecio* spp., 5, 6, 7, 10, pupate in earth, flies emerge I, 6, 7, 8; II, 4, flies caught 5 to 10; K16, Abbey Wood Marshes, Bexley, Darenth, Eltham, Farningham, Westerham; S17, Addington, Belmont, Bookham Common, Croydon, Epsom Common, Farthing Down, Mickleham Downs, Mitcham Common, Norbury, Reigate, Streatham Common, Thornton Heath, Wallington; M21, Finchley, Hampstead Heath; I.L., Cripple-gate.

Zonosema alternata Fln.: Larvae in fruits of *Rosa* spp. 9, 10, pupate in earth, flies emerge II, 5, 6, flies caught 6, 7; K16, Darenth; S17, Banstead Wood, Bookham Common, Epsom Common, Epsom Downs, Riddlesdown, Wallington, Walton Heath; M21, Enfield, Finchley.

Gonioglossum wiedemanni Mg.: Larvae in fruits of *Bryonia dioica*, 8, 9, pupate in earth, flies emerge II, 5, 6, flies caught 6, 7; S17, Banstead, Coulsdon, Mitcham Common, Purley, Riddlesdown.

Chaetostomella onotrophes Lw.: Larvae in flower-heads of *Centaurea montana*, *C. nigra*, *Cirsium arvense*, *C. palustre*, *Serratula tinctoria*, 7 to 5, pupate there, flies emerge I, 7, 8, II, 4, 5, 6, flies caught 5 to 9; K16, Bexley, Chislehurst, Eltham, Shoreham; S17, Addington, Ashtead Common, Banstead Downs, Banstead Wood, Bookham Common, Burgh Heath, Caterham, Colley Hill, Coulsdon, Epsom Common, Epsom Downs, Farthing Down, Langley Vale, Limpsfield Common, Little Bookham, Mickleham Downs, Mitcham Common, Riddlesdown, Wallington, Walton Heath; H20, Batchworth Heath, Bricket Wood; M21, Edgware, Hampstead, Woodside Park.

Chaetorellia loricata Rond.: Larvae in flower-heads of *Centaurea scabiosa*, 7 to 10, pupate there, flies emerge I, 7, 8, II, 6; S17, Epsom Downs, Headley, Langley Vale, Mickleham Downs.

Ceriocera cornuta F.: Larvae in flower-heads of *Centaurea scabiosa*, 7, 8, 9, pupate there, flies emerge II, 6, 7, flies caught 7; K16, Eynsford, Shoreham; S17, Addington, Banstead Downs, Banstead Wood, Caterham, Coulsdon, Epsom Downs, Fetcham Downs, Headley, Lacey Green, Langley Vale, Mickleham Downs, Riddlesdown, Woodmansterne.

Ceriocera microceras Her.: Larvae in stems of *Centaurea scabiosa*, 9 to 3, pupate there, flies emerge II, 6, 7, flies caught 7; S17, Banstead Downs, Banstead Wood, Caterham, Coulsdon, Epsom Downs, Farthing Down, Riddlesdown, Woodmansterne.

Trypeta colon Mg.: Larvae in flower-heads of *Centaurea scabiosa*, 7 to 5, pupate there, flies emerge I, 7, 8, II, 6, 7, flies caught 6, 7, 8; K16, Eynsford; S17, Addington, Ashted, Banstead Downs, Banstead Wood, Caterham, Coulsdon, Epsom Downs, Farthing Down, Headley, Lacey Green, Langley Vale, Mickleham Downs, Park Downs, Riddlesdown, Walton Heath, Woodcote, Woodmansterne.

Trypeta falcata Scop.: Larvae in roots or stems of *Tragopogon* spp., 7 to 11, pupate there, flies emerge II, 5, 6, flies caught 5, 6, 7; K16, Abbey Wood Marshes, Eltham, Erith Marshes; S17, Ashted Common, Banstead Wood, Bookham Common, Coulsdon, Little Bookham, Mickleham Downs, Mitcham Common, Riddlesdown, Selsdon Wood; M21, Edgware, Hampstead.

Trypeta ruficauda F.: Larvae in flower-heads of *Cirsium arvense*, *C. palustre*, *C. dissectum*, 7 to 3, pupate there, flies emerge II, 5, 6, 7, flies caught 6, 7, 8; K16, Abbey Wood Marshes, Bexley, Eltham, Erith Marshes, Eynsford, Farningham, St. Paul's Cray, Shoreham, Stone Marshes; S17, Ashted Common, Banstead Downs, Bookham Common, Epsom Common; H20, Batchworth Heath, Bricket Wood, Hertford; M21, Edgware, Finchley; I.L., Cripplegate.

Trypeta tussilaginis F.: Larvae in seeds of *Arctium* spp., 7 to 3, pupate there, flies emerge I, 9, 10, II, 5, 6, 7, flies caught 6, 7, 8; K16, Bexley, Eltham, Eynsford, Farningham, St. Paul's Cray; S17, Addington, Bookham Common, Banstead Downs, Banstead Wood, Epsom Common, Epsom Downs, Farleigh Wood, Headley, Norbury Park; H20, Batchworth Heath; M21, Chiswick, Edgware, Mill Hill, Scratch Wood.

Trypeta Winthemi F.: Larvae in flower-heads of *Carduus crispus*, 7 to 3, pupate there, flies emerge II, 6, 7, flies caught 6, 7; K16, Farningham, Stone Marshes; S17, Addington, Ashted, Beddington, Buckland Hills, Chipstead, Coulsdon, Epsom Downs, Farthing Down, Mickleham Downs, Park Downs, Riddlesdown.

Terellia serratulae L.: Larvae in flower-heads of *Carduus nutans* and *Cirsium vulgare* 8 to 4, pupate there, flies emerge II, 6, 7, flies caught 6 to 9; K16, Erith Marshes, Eynsford, Farningham, Stone Marshes; S17, Banstead Downs, Banstead Heath, Bookham Common, Buckland Hills, Coulsdon, Limpsfield, Mickleham Downs, Mitcham Common, Norbury, Park Downs, Riddlesdown, Worms Heath.

Xyphosia miliaria Schrnk.: Larvae in flower-heads of *Cirsium arvense* and *C. palustre*, 7 to 3, pupate there, flies emerge I, 7, 8, 9, II, 5, 6, 7, flies caught 6 to 9; K16, Bexley, Chislehurst, Eynsford, Farningham, St. Paul's Cray, Shoreham; S17, Ashtead Common, Banstead Downs, Banstead Wood, Bookham Common, Burgh Heath, Epsom Common, Epsom Downs, Langley Vale, Limpsfield Common, Mickleham Downs, Mitcham Common, Park Downs, Riddlesdown, Thornton Heath, Walton Heath, Worms Heath, Woodcote; H20, Batchworth Heath, Bricket Wood, Hertford; M21, Edgware, Hampstead; I.L., Cripplegate, Hyde Park.

Urophora cardui L.: Larvae in galls on stems of *Cirsium arvense*, 7 to 4, pupate there, flies emerge II, 5, 6, 7, flies caught 6, 7; K16, Bexley, Eltham, Eynsford, Shoreham; S17, Addington, Ashtead Common, Banstead Downs, Banstead Wood, Bookham Common, Burgh Heath, Chipstead, Colley Hill, Coulsdon, Epsom Common, Epsom Downs, Farthing Down, Fetcham Downs, Hamsey Green, Headley, Headley Heath, Lacey Green, Langley Vale, Limpsfield Common, Merstham, Mickleham, Mickleham Downs, Mitcham Common, Mitchley Wood, Norbury Park, Oxshott, Park Downs, Riddlesdown, Selsdon Wood, Sutton, Walton Heath, Wimbledon Common, Woodmansterne, Worms Heath; M21, Edgware, Finchley, Hampstead, Mill Hill; I.L., Cripplegate.

Urophora jaceana Her.: Larvae in galls in flower-heads of *Centaurea nigra*, 7 to 4, pupate there, flies emerge II, 5, 6, 7, flies caught 6, 7; K16, Bexley, Chislehurst, Eltham, Eynsford, Farningham, Shoreham, Stone Marshes; S17, Addington, Ashtead Common, Banstead Downs, Banstead Wood, Bookham Common, Burgh Heath, Caterham, Chipstead, Colley Hill, Coulsdon, Epsom Common, Epsom Downs, Farthing Down, Fetcham Downs, Headley, Lacey Green, Langley Vale, Limpsfield Common, Mickleham Downs, Park Downs, Riddlesdown, Wallington, Walton Heath, Worms Heath; M21, Edgware, Enfield.

Urophora quadrifasciata Mg.: Larvae in seeds of *Centaurea nigra*, 7 to 3, pupate in seeds or flower-heads, flies emerge I, 7, 8, II, 5, 6, 7, flies caught 5 to 8; K16, Bexley, Chislehurst, Eltham, Shoreham, Stone Marshes; S17, Addington, Banstead Downs, Banstead Wood, Bookham Common, Chessington, Chipstead, Colley Hill, Coulsdon, Epsom Common, Epsom Downs, Farthing Down, Headley, Lacey Green, Merstham, Park Downs, Riddlesdown, Walton Heath; M21, Edgware.

Urophora solstitialis L.: Larvae in galls in flower-heads of *Carduus nutans*, 8 to 4, pupate there, flies emerge II, 6; S17, Banstead Downs.

Urophora stylata F.: Larvae in galls in flower-heads of *Carduus nutans*, *Cirsium arvense*, *C. palustre* and *C. vulgare*, 8 to 4, pupate there, flies emerge II, 6, 7, flies caught 6, 7, 8; K16, Darenth, Eltham, Eynsford, Farningham, St. Paul's Cray; S17, Ashtead Common, Banstead Downs, Banstead Wood, Beddington, Beddington Park, Bookham Common, Carshalton, Coulsdon, Epsom Common, Epsom Downs, Farthing Down, Fetcham Downs, Headley Heath, Limpsfield, Mickleham Downs, Mitcham Common, Mitchley Wood, Norbury, Norbury Park, Park Downs, Riddlesdown, Selsdon Wood, Walton Heath, Wimbledon

Common, Worms Heath; H20, Batchworth Heath, Bricket Wood; M21, Edgware, Hampstead, Southgate; I.L., Cripplegate.

Myiola caesio Harr.: Food-plant of larvae unknown, flies caught 6, 7, 8; K16, Bexley; S17, Limpsfield Common, Oxshott; H20, Hertford.

Myopites blotii Breb.: Larvae in galls in flower-heads of *Pulicaria dysenterica*, 8 to 6, pupate there, flies emerge II, 6, 7, 8, flies caught 7, 9; S17, Ashted Common, Bookham Common, Epsom Common, Mitcham Common.

Ensina sonchi L.: Larvae in flower-heads of *Aster tripolium*, *Leontodon autumnalis*, *L. hispidus*, *Picris hieracioides*, *Sonchus* spp., *Tragopogon pratensis*, 6, 7, 8, 9, pupate there, flies emerge 6, 7, 8, 9, flies caught 6, 7, 8, 9; K16, Abbey Wood Marshes, Eltham, Stone Marshes; S17, Ashted Common, Banstead Wood, Bookham Common, Carshalton, Coulsdon, Epsom Common, Epsom Downs, Headley, Limpsfield Common, Merstham, Norbury Park, Nutfield Marsh, Riddlesdown, Selsdon Wood, Wallington, Woodmansterne, Worms Heath; M21, Hampstead; I.L., Cripplegate.

Ditricha guttularis Mg.: Larvae in galls on stem-base of *Achillea millefolium*, 7, pupate there, flies emerge I, 7, 8, flies caught 7, 9; S17, Bookham Common, Farthing Down, Fetcham, Lacey Green.

Hoplochaeta pupillata Fln.: Larvae in swollen flowers of *Hieracium* spp., 7 to 11, pupate there, flies emerge I, 7, 8, 9, II, 4, 5, 6, flies caught 5, 7, 8, 9; K16, Beckenham, Bexley, Chislehurst, Forest Hill; S17, Ashted Common, Banstead Downs, Bookham Common, Coulsdon, Croham Hurst, Epsom Common, Fetcham, Limpsfield Chart, Littleheath Wood, Oxshott, Oxshott Heath, Walton Heath, Wimbledon Common, Worms Heath; M21, Finchley.

Ictericia westermanni Mg.: Host-plant of larvae doubtful, flies caught 7, 8, 9; S17, Ashted Common, Bookham Common, Epsom Common; E2.18, Epping Forest; M21, Edgware, Mill Hill, Scratch Wood.

Oxya flavipennis Lw.: Larvae in galls on roots of *Achillea millefolium*, 6, 7, pupate there, flies emerge I, 7; S17, Bookham Common, Epsom Common, Fetcham, Epsom Downs, Lacey Green, Limpsfield, Mickleham Downs, Worms Heath.

Oxya parietina L.: Larvae in stems of *Artemisia vulgaris*, 9 to 3, pupate there, flies emerge II, 5, 6, flies caught 5, 6; K16, Eltham, Swanscombe Marshes; S17, Banstead Downs, Bookham Common, Coulsdon, Epsom Common, Riddlesdown, Worms Heath; M21, Edgware, Hampstead Heath; I.L., Cripplegate.

Sphenella marginata Fln.: Larvae in swollen flowers of *Senecio* spp., 7 to 9, pupate there, flies emerge I, 7, 8, 9, flies caught 6 to 9; K16, Abbey Wood Marshes, Eltham, Eynsford, Stone Marshes, Swanscombe Marshes; S17, Arbrook Common, Ashted Common, Banstead Downs, Bookham Common, Epsom Common, Epsom Downs, Fetcham Downs, Mitcham Common, Riddlesdown, Wallington, Walton Heath, Woldingham; E2.18, Coopersale Common; M21, Edgware, Finchley; I.L., Cripplegate.

Paroxyna bidentis Desv. (*elongatula* Lw.): Larvae in flower-heads of *Bidens tripartita*, 8, 9, pupate there, flies emerge I, 8, 9, flies caught 6;

S17, Bookham Common, Epsom Common, Mitcham Common, Norbury Park.

Paroxyna loewiana Hend.: Larvae in flower-heads of *Solidago virgaurea* 9, 10, pupate there or in earth, flies emerge II. 5, 6, flies caught 7, 9; K16, Farningham; S17, Selsdon Wood.

Paroxyna misella Lw.: Larvae in galls on stems of *Artemisia vulgaris*, 6, 7, pupate there, flies emerge I, 6, 7, flies caught 4, 6 to 10; K16, Bexley, Darenth, Eltham, Erith Marshes, Stone Marshes; S17, Coulsdon, Epsom Common; M21, Edgware, Finchley, Hampstead Heath, Hampton, Harlington; I.L., Cripplegate.

Paroxyna parvula Lw.: Food-plant of larvae not known, flies caught 6, 7; K16, Stone Marshes; I.L., Cripplegate.

Paroxyna plantaginis Hal.: Larvae in flower-heads of *Aster tripolium*, 9, 10, pupate there, flies emerge II. 6, 7, flies caught 6, 7, 8; K16, Abbey Wood Marshes, Erith Marshes, Stone Marshes, Swanscombe Marshes.

Tephritis bardanae Schrnk.: Larvae in flower-heads of *Arctium* spp., 7, 8, 9, pupate there, flies emerge I, 8, 9, flies caught 5, 6, 7, 10; K16, Bexley, Farningham, Halstead; S17, Addington, Ashtead Common, Banstead, Banstead Downs, Banstead Wood, Bookham Common, Buckland Hills, Chipstead, Coulsdon, Epsom Downs, Farthing Down, Headley, Limpsfield Common, Oxshott, Riddlesdown, Walton Heath, Worms Heath; H20, Arkley, Northaw; M21, Edgware.

Tephritis cometa Lw.: Larvae in flower-heads of *Cirsium arvense*, 7, 8, pupate there, flies emerge I, 8, flies caught 2 and 10; S17, Ashtead Common, Epsom Downs; M21, Edgware.

Tephritis conjuncta Lw.: Larvae in flower-heads of *Chrysanthemum leucanthemum*, 6, 7, pupate there, flies emerge I, 6, 7, 8, flies caught 1 to 12; K16, Bexley, Farningham, St. Paul's Cray, Stone Marshes; S17, Addington, Ashtead Common, Banstead Wood, Bookham Common, Chipstead, Coulsdon, Epsom Downs, Farthing Down, Headley, Limpsfield Common, Oxshott, Riddlesdown, Walton Heath, Worms Heath; H20, Arkley, Northaw.

Tephritis formosa Lw.: Larvae in flower-heads of *Hypochaeris radicata*, *Sonchus arvensis*, flies caught 10; H20, Bricket Wood.

Tephritis hyoscyami L.: Larvae in flower-heads of *Carduus crispus*, 6, 7, 8, pupate there, flies emerge I, 7, 8, flies caught 8; K16, Farningham; S17, Addington, Banstead Wood, Chipstead, Epsom Downs, Fetcham Downs, Mickleham Downs, Park Downs, Riddlesdown.

Tephritis leontodontis Deg.: Larvae in flower-heads of *Leontodon autumnalis*, pupate there, flies caught 3; M21, Edgware.

Tephritis ruralis Lw.: Larvae in flower-heads of *Hieracium pilosella*, pupate there, flies caught 6; S17, Headley.

Tephritis separata Rdi.: Food-plant of larvae unknown, flies caught 11; S17, Coulsdon.

Tephritis vespertina Lw.: Larvae in flower-heads of *Hypochaeris radicata*, 5 to 8, pupate there, flies emerge I, 6, 7, 8, flies caught 1 to 12; K16, Abbey Wood Marshes, Eltham, Farningham, St. Paul's Cray, Stone Marshes; S17, Addington, Ashtead Common, Banstead Downs,

Banstead Wood, Beddington, Beddington Park, Bookham Common, Burgh Heath, Colley Hill, Coulsdon, Epsom Common, Epsom Downs, Farthing Down, Fetcham Downs, Headley, Lacey Green, Leatherhead, Limpsfield Common, Mitchley Wood, Oxshott, Riddlesdown, Thornton Heath, Wallington, Walton Heath, Worms Heath; H20, Bricket Wood; M21, Edgware.

Trypanea stellata Fues.: Larvae in flower-heads of *Hieracium murorum* L. agg., *Senecio jacobaea*, *S. squalidus*, 8, pupate there, flies emerge I, 8, 9, flies caught 7, 8; K16, Eltham, Farningham, Stone Marshes; S17, Bookham Common, Epsom Common, Norbury, Riddlesdown; M21, Finchley; I.L., Cripplegate.

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Small Mammals Caught Near London

By R. A. DAVIS, M.Sc., D.I.C., A.R.C.S.

IN the course of certain studies on mice, regular trapping has been carried on from the end of September 1955 in three rural habitats on the outskirts of the London Area.

A record of the small mammals caught is therefore of interest:—

(i) In a barn, ricks and hedgerow near Leatherhead sewage farm (National Grid reference 151577, map 170), the following were caught between 28/9/55 and 19/12/55:—42 House Mice (*Mus musculus* L.), 10 Field Mice (*Apodemus sylvaticus* (L.)) and 1 Field Vole (*Microtus agrestis* (L.)).

(ii) In hedgerows and ricks at Stoke d'Abernon (Nat. Grid ref. 136589, near triangulation point 197, map 170), the following were caught between 28/9/55 and 9/12/55:—22 House Mice, 5 Field Mice, 3 Weasels (*Mustela nivalis* L.), 2 Harvest Mice (*Micromys minutus*

(Pallas)), 1 Field Vole, 1 Bank Vole (*Clethrionomys glareolus* Schreber) and 1 Common Shrew (*Sorex araneus* L.).

(iii) In hedgerows, ricks and a granary near West Wickham (Nat. Grid ref. 393639, map 171), the following were caught between 28/9/55 and 5/1/56:—53 House Mice, 28 Field Mice, 13 Common Shrews, 10 Harvest Mice, 9 Field Voles and 8 Bank Voles.

In area (i), 26 of the House Mice were trapped in ricks and none in the hedgerow. In area (ii), 4 House Mice were caught in hedgerows and 18 in ricks. In area (iii), 35 House Mice were caught in hedgerows, 12 in ricks and 6 in a granary. Although this distribution partly reflects the relative intensities of trapping in the different sites in each locality, nevertheless it is noteworthy that so many House Mice occurred in the open. It had previously been noted (Southern and Laurie, 1946) that the House Mouse was the third commonest mammal on arable land. In their work, however, breakback traps alone were used, whereas in the present studies, mainly live traps (the 'Longworth') are being used. The numbers so far caught and the time so far expended are too small for significance, but in areas (ii) and (iii) House Mice have been relatively as common as Field Mice in the hedgerows up to the present.

Area (ii)	<i>M. musculus</i>	.....	4
	<i>A. sylvaticus</i>	.....	4
Area (iii)	<i>M. musculus</i>	.....	35
	<i>A. sylvaticus</i>	.....	28

Another point of interest is the occurrence of the Harvest Mouse in such numbers that it cannot be said to be 'rare' compared with the other mammals. It had, until recently, been described as an uncommon mammal in Britain, but there are now similar reports of greater abundance from parts of the country other than the three dealt with in this paper.

REFERENCE.

SOUTHERN, H. N., and LAURIE, E. M., 1946, 'The house-mouse (*Mus musculus*) in corn ricks'. *J. Anim. Ecol.*, **15**, 134-149, 1946.

Nature Conservation in the London Area

Report on the Activities of the Nature Conservancy, 1955

By W. A. MACFADYEN.

THE only activity in the London area of interest to report is that at Swanscombe.

GEOLOGICAL RESERVE.

SWANSCOMBE SKULL SITE, KENT. M.R. 51/598743.

Mr. A. T. Marston kindly visited the Reserve and marked the exact positions of his discoveries, in the Middle Gravel, of the two bones of the famous Acheulian skull, the occipital found on 29th June 1935, and, 24 feet distant to the E.S.E., the left parietal found on 15th March 1936.

Permission was given to Mr. John Wymer to carry out excavations in the Reserve. On 30th July 1955, the day after starting work, his party, which included Mr. and Mrs. B. O. Wymer and Mr. Adrian V. B. Gibson, had the great good fortune to discover in the undisturbed Middle Gravel the right parietal of a human skull. It lay approximately equidistant 50 feet from each of Mr. Marston's two earlier finds of skull bones, and S.S.W. of them.

The bone was photographed *in situ*, and with the help of Mr. Marston, who had been immediately notified, it was carefully removed in some nine fragments into which it had disintegrated. For safety and convenience it was deposited in the Reading Museum over the Bank Holiday week-end, and then taken to the British Museum (Natural History) for treatment and preservation. It was later presented to the national collection by the Conservancy.

This right parietal proved to be another part of the same Acheulian skull found by Mr. Marston 20 years earlier. The sutures fitted perfectly with those of the earlier found portion, and the identity was further confirmed by a curious naturally flattened area of the skull which extended across the junction.

That part of the Reserve surrounding the sites of all three finds is protected by a barbed wire and chain-link fence.

Work continued in the Middle Gravel until late autumn, and was supported by grants from the British Museum (Natural History) and the Wenner-Gren Foundation of New York.

The site was visited by a number of distinguished scientists, including the Abbé Breuil, and further work here is planned by Mr. Wymer during the present year.

A collection of more than 1,100 Acheulian artifacts was made, including a number of very fine flint hand-axes. Many fragmentary mammalian bones were also found, the majority Bovids (probably bison, as that has previously been identified here at this level), and one of dog, which was new to these gravels; but no further identifiable human remains.

A find of much interest was some charcoal, the first evidence of fire at Swanscombe.

It is pleasant to record that no further damage by trespassers has occurred, a result attributed to the vigorous campaign undertaken to inform the general public and particularly local schools of the importance both of the site and of non-interference with the excavations.

Books

Species Studies in the British Flora, ed. J. E. Lousley, pub. Botanical Society of the British Isles, London, 1955. 188 pp. with 2 half-tone plates and 24 text-figures. 20/-.

This is the report of the Conference held in 1954 under the title of "The Species Concept in its relation to the British Flora". The papers

read covered the subject over a wide field and in addition to those dealing with special studies of flowering plants, the related problems in the study of algae, bryophytes, ferns and palaeobotany were surveyed. Many of the speakers were Professors and some of the papers are beyond the scope of the amateur whose concept of a species is based upon what he sees with the naked eye or a hand-lens. The experts have advanced far beyond this and the views of Prof. J. Heslop-Harrison and Mr. J. S. L. Gilmour on the new tendencies make fascinating reading. They are followed by some critical remarks by Dr. W. B. Turrill who suggested that there is still much that the amateur can do, even in the well-worked field of British flowering plants, by applying the experimental methods of synthetic taxonomy, e.g. by growing plants and their hybrids in garden plots. Such experiments with groundsel were described by Prof. S. C. Harland. Prof. T. G. Tutin mentioned the use of vegetative characters for separating grasses, and Dr. R. Melville used elms and their hybrids to show the value of the measurements of leaves. Dr. J. H. Burnett spoke on the causes of variability within species and Dr. H. H. Thomas on the great period of time which has elapsed since flowering plants began to be evolved.

B. W.

Badgers in Woodlands [by E. G. Neal], Forestry Commission Leaflet No. 34, H.M.S.O. [1955], pp. 12, 8 figures. 9d.

The Crossbill [by Bruce Campbell], Forestry Commission Leaflet No. 36, H.M.S.O. [1955], pp. 12, 5 figures. 9d.

Rusts of British Forest Trees by J. S. Murray, Forestry Commission Booklet No. 4, H.M.S.O., 1955, pp. 15, 13 figures, 9 in colour. 2/6.

No better qualified authors could have been obtained for the leaflets on Crossbill and Badgers, which are both miniature monographs, well illustrated with photographs and excellent value for the money. Many others listed appear to be of interest to the naturalist and binders may be purchased for 1/3 to hold the leaflets, which are perforated for the purpose.

Mr Murray provides an introduction to the life cycle of Rust Fungi, a short account of about 18 species parasitic on British Forest Trees (mostly conifers) and a summary table of the symptoms associated with each species. It is remarkable that the more important broadleaved trees in Britain, oak, beech, elm, ash and sweet chestnut, are free from rust parasites. The importance of a knowledge of the alternate host, often a herbaceous plant, is well brought out in *Melampsora pinitorqua*, which can cause serious damage to pines if the latter are planted near aspens. It appears that damage by rust is rarely serious in this country, which is fortunate, as "direct control of rusts is difficult and there is little information on it". In the reviewer's copy, four of the colour photographs are rendered useless by registration, faulty by as much as an eighth of an inch.

C. P. C.

Megastigmus flies attacking conifer seed, by N. W. Hussey, Forestry Commission Leaflet No. 8, H.M.S.O., Revised 1954, pp. 10, 6 figures. 6d.

This cheap but well-produced leaflet gives a key to the British species of this genus of Chalcids. The habits, distribution and control methods are dealt with and the imago, larva and parasite of one of the genus are well figured together with typical damage. It would be useful to have all woodland insects so well biographed.

L. P.

Pocket Guide to Wild Flowers, by D. McClintock and R. S. R. Fitter, pp. 340, over 1400 illustrations, 600 in colour. Collins, 1956. 25/-.

The embryo botanist's constant prayer is for a book with plenty of pictures, a non-technical text, common as well as up-to-date scientific names and of a size and price to suit his pocket. Two eminent members of our Society have made one of the best endeavours yet to answer this prayer.

The arrangement of plants by colour and a general similarity of form may not please the expert but it is the best way to get the beginner going and one not disdained by many good botanists. Most of the illustrations are of a high standard, some excellent and only a few have suffered from reduction or colour-reproduction to become unhelpful in identification (e.g. *Mind-your-own-business*, which could pass for one or two other small creeping species). The standard is maintained in the black-and-whites illustrating plants with greenish or whitish flowers, and the line drawings of sedges, grasses and ferns. The inclusion of a daisy-head as a guide to scale on each plate is a welcome idea, but the inclusion of a number of aliens may lead to criticism. As the beginner may well find these growing wild with no knowledge of their status, their appearance in this book is justified.

Use of the illustrations is recommended by the authors as the first step in identification but if this fails there are keys and descriptions, the latter prepared as simply as possible with a glossary to explain the unavoidable technical terms. General habitat and distribution, flowering-time and a reference to its page in the *Flora of Clapham*, Tutin & Warburg are given for each species; a system of asterisks denotes the degree of rarity. The would-be identifier may find the whole process somewhat tortuous at first, but with plenty of cross-references between keys, text and plates and with many small drawings of fruits and other diagnostic characters inserted in the text to help him he should succeed.

Further information is provided in the introduction and further aid in the indexes and end-maps. The whole production is of high quality and a rucksack will easily carry the book into the field if one's pocket is not capacious enough. The inevitable few errors that

escape even the most careful editing do not modify the highest recommendation to purchase this guide especially at the reasonable price demanded.

E. B. B.

The following books have also been added to the Library during 1955:—

- E. A. Armstrong, *The Wren*.
 B. P. Beirne, *British Pyralid and Plume Moths*.
 R. W. Butcher and F. E. Strudwick, *Further Illustrations of British Plants*.
 A. H. Church, *Plant-Life of the Oxford District*, pts. I, II and III.
 R. S. R. Fitter and R. A. Richardson, *Collins Pocket Guide to Nests and Eggs*.
 E. B. Ford, *Moths*.
 E. H. Hering, *Biology of the Leaf Miners*.
 A. B. Jackson, *Albury Park Trees and Shrubs*.
 A. R. Jewell, *The Observer's Book of Mosses and Liverworts*.
 Sir F. Keeble, *The Life of Plants*.
 D. Lack, *The Natural Regulation of Animal Numbers*.
 L. H. Matthews, *Wandering Albatross*.
 E. Simms, *Bird Migration*.
 E. M. Wakefield, *The Observer's Book of Common Fungi*.
 S. W. Wooldridge and D. L. Linton, *Structure, Surface and Drainage in S.E. England*.
Ardea, 1955.
Bird Banding, 1953 and 1954.
Directory of British Fossiliferous Localities, 1954.
The Entomologist, 1954.
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Obituary

Stanley Austin

Stanley Austin was born in Dalston on the 11th of August 1874. Educated privately, he joined the London Assurance in 1893 and remained with them until he retired on pension in 1934. He lived in

the same house at Darenth Road, Stamford Hill, from 1885 to 1952, when he left it owing to what turned out to be his last illness. He was never married.

He joined the North London Natural History Society (one of the ancestors of the present society) on its formation in 1892 by a small number of enthusiastic schoolboys and their friends from the Grocers Company's School, Hackney Downs. The Society was originally a school society, called the Grocers Company's School Science Club, and held its meetings at the school, by permission of the Headmaster. (The names best remembered from the school will be those of Clive Bramwell Smith, James Applegate Simes, and above all Randolph William Robbins.) The permission was withdrawn after a year or two because too many outsiders were coming in, and the boys, now growing into men, were joined by a band of local naturalists, including Louis Beethoven Prout (a professor of music, but later a museum entomologist and specialist on the Geometridae of the world), Charlie Nicholson (a good all-round naturalist, but not to be confounded with the eminent botanist, Charles Smith Nicholson, who joined some years later, and became President), Arthur Unwin Battley, who died young, Ambrose Lewis, Fred and Arthur Harvey, Walter Woodward, E. C. Joy and others. Thus the N.L.N.H.S. was founded. Arthur J. Rose was its first President. A little later on we were joined by Arthur Bacot, then a clerk in the City, and not yet aware of his destiny as government entomologist.

It was Bacot who "discovered" Stanley Austin in the Society. Stanley was a little younger than the rest of us, and was regarded by most as a good-natured, voluble, somewhat excitable little chap with not very much in him. But in 1896 the post of Treasurer became vacant, and was difficult to fill. Bacot proposed Austin, and he was elected. I asked Bacot afterwards if this were merely a forlorn hope, or if he considered Stanley a really good man. He told me he thought Austin a good man who was overlooked and under-rated. And how right he was. We have never had a better Treasurer. There is not much in the job, one would think, to bring out personality. But Stanley impressed his personality on it from the first. Whatever he had to do was a matter of duty with him, and he did it thoroughly with all his might. He was no mere receiver of subscriptions and keeper of accounts. It was his duty to get in every subscription owing to the Society, and he did his duty up to the last inch. He never suffered from shyness. Defaulters were not only written to, but personally called upon if within reach. The axe was never resorted to until all possible persuasion had failed. And his perseverance and persuasive tongue and pen saved the Society many a member, and got in many a hopelessly overdue subscription. Thereafter he never looked back, but was always regarded as one of the Society's ablest working officials.

His first hobby was Entomology (Lepidoptera). He soon diverged into Ornithology, and later took up Archaeology also. He made himself competent in both these subjects, and used to say they went very

well together. A keen love of the country, and of nature in general, he always had. At one time he had to spend some months in Switzerland (I think at Arolla) on account of health.

His greatest work for the Society was the formation of the Ornithological Section in 1917.

This needs a little explanation. The official Sections of the Society, as such, did not exist before this date. They were preceded by a number of private Research Committees which had been formed some years earlier at the suggestion of Louis Prout. Austin cannot be said to have founded even the Research Committee for Ornithology. That was the work of Cyril Collenette, whom I had the privilege of assisting, in 1907. But Austin naturally soon became one of the Committee's principal members. Later on he was joined by Glegg, who was practically one of his pupils, and, as Collenette went abroad, these two came to be in charge of Ornithology in the Society.

Towards the end of the 1914-18 war the Society (which had now, by fusion with the City of London Society in 1914, become the present L.N.H.S.) was in a bad way and going downhill fast. A drastic reconstruction was necessary. The idea was conceived of turning the Research Committees into sections and throwing them open to all members who cared to join. This was bitterly opposed both by Austin and Glegg. The latter went abroad on service, and Stanley wrote to me: "Glegg left England in great indignation at the scheme". There was a battle royal on the Council. Stanley had to fight it alone. And he lost!

But that was his hour. He was no Achilles to sulk in his tent after defeat. His sense of loyalty, as always, was paramount, and he set himself, with all his native energy and thoroughness, to make the new system a success.

It is doubtful if any one now in the Society can have any idea of what this meant at the time. The Ornithologists are now the Society's largest section, with a membership of some hundreds, and many years of active prosperity and usefulness already behind them. But in the beginning it meant holding meeting after meeting in an empty room, with very small audiences.

But Stanley was the ideal man for the job. He never feared riding for a fall. He never minded making himself ridiculous. He was always a ritualist, with a passion for detail, and insisted on everything, no matter how slight, being done in due form. He continued to hold his meetings in spite of every discouragement. And he won through in the end by sheer dogged persistence and perseverance. Very slowly, one by one, members began to trickle in. The election of J. P. Hardiman in 1921 gave a great stimulus to the Ornithological Section. The ultimate result is now known to all. But that the Section is what it is to-day is due to Stanley Austin as much as to anyone. He was Chairman of the Section from 1917 to 1919, when he took over the Secretaryship on Glegg's return.

In due course he served a term as President of the Society from 1925 to 1927, and was probably one of the best administrative Presidents we have had. As always, he took his duties seriously. He was no mere figurehead. It was his business to supervise all the details great and small, all the internal workings of the Society. And this he did to the utmost of his ability, though somewhat hampered by the masterful nature of A. B. Hornblower as Secretary. One of his maxims was "If you want a job done, do it yourself". But he was also an excellent Chairman of Council, particularly at "difficult" meetings. I recall vividly one meeting many years ago. I forget entirely what it was all about, but I know that tension ran high, and resignations were in the air. But Stanley was at his best. He had the meeting well in hand from the start, and kept it firmly under control throughout. Everything passed off smoothly and urbanely, and nobody resigned.

No memoir of Stanley Austin would be complete without some account of the help he gave to others. He was gregarious by temperament, never very happy in his own society, and had a wide and varied circle of friends. Though not clever in the ordinary sense of the term, he was very knowledgable and resourceful in practical matters. His abilities and resources were always at the service of anyone who wanted them. And his acquaintance was so wide and varied that, if he could not do a job himself, he nearly always knew of someone else who could. The result was that he was able to help his friends in many extraordinary and unexpected ways. Here are a few of them within my personal knowledge:—Selling a piano; valuing a diamond ring; feeding chickens while owner on holiday; seeing friend's wife across London; bringing friend's daughter home from school in the country; taking on lantern and patter when lecturer had to depart; finding a partner for a friend in business. He could turn his mind to almost anything, and was always ready to do so. And this went on throughout the whole of his life. Through all the years I have known him I cannot recall a time when he was not doing someone a service.

He died at Parkstone, Dorset, on the 5th of April 1955, after lying for more than two years helpless in bed. And thus closed a long, generous, useful and, in spite of severe domestic trials, not unhappy life except for his last illness. His usefulness to the Society will appear from the above notes.

L. J. T.

There can have been few members who have served the Society for so long and so assiduously as Stanley Austin. He served continuously and actively on the Council from 1896 until his final illness. He was one of the Curators from 1914 to 1919; Vice-President 1923-4 and 1933-6; Director of Sectional Organisation 1928-9 and 1937-1946.

Austin was a most conscientious and inspiring member of the Society's very small Nature Reserves Investigation Committee. He attended every one of its twenty-five meetings from February 1943 until August 1947, when the Committee tendered its resignation to the Coun-

cil on the completion and publication of its Report, "Nature Conservation in the London Area".

In 1947 he was again elected to Council and even then at the age of 73 he did not rest on his oars but immediately served on the Committee of the Ramblers' Section and took on the office of Recorder and Reading-Circle Secretary for the Archaeology Section until in 1953 his illness finally compelled him to stop helping the Society in any active way. He was elected an Honorary Vice-President in 1949.

In spite of and perhaps because of his incessant activity on behalf of the Society he appears to have published little other than a short note in the *L.N.* for 1932 on Bird Sanctuaries in the London Parks. His Presidential addresses were never published and there is not even a printed record of their titles. Austin was the worker and encourager behind the scenes.

C. P. C.

Official Reports for 1955

Council's Report

AFTER the steady rise from 606 in 1945 to 1325 in 1952, membership seems to have stabilized at about 1300, some years a little less, some years a little more. This year the total has fallen to 1291 on 31st October: the number of new members elected, 141, is also smaller than last year by 21.

Meetings, however, continue to be well attended: even the very full programme of lectures arranged by the Society does not seem to satisfy all needs, for the additional courses of lectures held under the auspices of the University of London were extremely popular. This year three of these courses were held, an ornithological series given by the staff of the Edward Grey Institute and Cambridge University, at the Linnean Society's rooms, and as a new venture two courses for small groups. The Southwest Middlesex Group also arranged a small course of their own at Hounslow and this proved so popular that another is to be held next year. For next Spring a course of nine lectures has been planned for the Geology Section.

Although the number of members using the Library is still disappointingly small, much more use is being made of the rooms at Eccleston Square, where informal meetings are regularly held by the Entomological Section and from time to time by other Sections.

Council wish to express their great appreciation to Mrs. Small who, in addition to her duties as Assistant Treasurer, has had to cope with all the work of the General Secretary during his absence in Australia. Since his return, Mr. Toombs has found that pressure of other work will make it necessary for him to resign from the General Secretaryship, a post he has held since May 1945. Mrs. Small has

offered to stand for election as General Secretary and it is proposed that an additional office of Hon. Secretary be created to relieve the General Secretary and President of some of the work that the increased size and status of the Society have engendered, particularly that of liaison with other societies. Mr. Castell has agreed to serve in this capacity, subject to the approval of the Annual General Meeting.

Special thanks are due to Mr. Toombs, who has been General Secretary for 10 years, during which time the Society's membership has more than doubled. Not only has this involved him in a much greater amount of work than could have been foreseen when he took on the job, but his own patience and helpfulness in dealing with enquiries have played a large part in encouraging prospective members to join the Society. The Council has shown its appreciation of his services by electing him an Honorary Member of the Society.

Details of Sectional activities are shown under the reports of the appropriate Sections, but we must note here with some satisfaction that, after many years of preparation of the Ornithological Section's book, *The Birds of the London Area since 1900*, a contract has now been signed with Messrs. William Collins, Sons & Co., Ltd., for its publication under the Society's name. It is hoped that the book will appear in the autumn of 1956.

We have to record, with great regret, the deaths of the following members:—S. Austin, C. J. F. Bensley, R. L. Collett, Miss M. J. England, W. E. Gaze, Mrs. Martin-Clarke, G. W. Simmonds, E. H. N. Skrimshire, Miss Venour.

Although a full obituary notice appears elsewhere in this issue, we should like to pay tribute here to the late Mr. Austin for some fifty years of devoted service in the interests of this Society. He occupied many offices in the course of this time, including the Presidency, and was often active behind the scenes in some of the delicate negotiations about accommodation for the Society's meetings and collections. The Society has received a legacy of £50 from his estate.

Curator's Report.

During the past year very few additions have been made to the collections and even fewer members have taken advantage of the facilities made available on Library and Collections evenings.

The Ornithological and Entomological collections have been examined and found in good condition, though bird skins to replace those which are deteriorating through age would be welcomed.

The herbarium is free from insect pests but damage to specimens through damp has been detected. In order to avoid further damage it is essential that adequate heating should be maintained whenever the rooms are used during the winter months.

D. H. KENT, *Curator.*

Librarian's Report.

The installation of new gas-fires has solved the heating problem, and last winter the rooms were properly warmed. There has been a fall in the number of items borrowed from 274 to 206 but the people who do attend the library evenings often stay a long time, sitting down and browsing on the books in comfort. The average attendance at library evenings has been 9, with a maximum attendance of 12.

Binding is being kept up-to-date. About 30 volumes have been added to the library by gift and purchase, a notable acquisition being a run of the Proceedings of the Geologists' Association, which has been bound.

In conclusion, I should like again to express my grateful thanks to the Sectional Librarians and the members of the Library Rota for their work in the library and attendance at the fortnightly library evenings.

R. W. HALE, *Librarian*.

Chingford Branch Report.

The Annual General Meeting was held on 12th February, 1955, when the same committee was re-elected. This was the only indoor meeting held and it was well supported, the attraction being Mr. F. Speakman, the authority on wild life in Epping Forest, who gave an instructive talk entitled "Animals in Epping Forest".

There were 25 field meetings in the year, the average attendance being 14, an increase over the previous year due, perhaps, to the finer weather but also to the friendly and loyal co-operation of members attending.

By request an evening ramble was held to hear the nightingale; this will be included as a regular feature in future, as it appears to be as popular as the meeting to hear the nightjar. A delightful expedition was made by boat across to Heron Island on the Walthamstow reservoirs, where the young herons could be seen in their nests; this meeting was well organised by Mr. G. Mugele, who also kindly arranged tea. We are grateful to Mr. E. T. Nicholson, one of the older members of the Chingford Branch, who continues to take regular meetings of great interest in his spare leisure time. Mrs. D. Boardman, the fungi expert, took her usual autumnal meeting and afterwards arranged a display of specimens gathered, so that they could be easily identified.

After a successful year we are still anxious to widen the scope and area of the field meetings, and all suggestions are carefully considered.

J. JONES, *Field Meetings Secretary*.

South-West Middlesex Group Report.

1954-55 membership shows little change. Our present total of 85 is made up by 69 Ordinary members, 13 Associates and 3 Affiliated Societies.

Attendances at our indoor and field meetings have increased, mainly due to better weather conditions this year, average attendances for indoor meetings being 19, and for outdoor 21.

A wide variety of interests have been catered for by our programme secretary, and communications at indoor meetings and observations in

the field have been most rewarding this year. It is refreshing to have heard papers read by two of our group members this year, our Vice-Chairman, Mr. H. J. Mackett, and Mr. A. D. Roberts.

A course of lectures arranged through the Department of Extra Mural Studies, London University, and given at the Town Hall, Hounslow, has met with good support—22 students are attending. It is hoped to continue this feature next year.

Ornithology. Our Chairman and group recorder for ornithology has received records of 102 birds from members in our area.

Entomology. Our group recorder Mr. C. W. Pierce has continued his survey of the Borough of Heston and Isleworth, adding 50 species of lepidoptera to our records.

Botany. We are still without a group recorder for botany.

Nature Conservation. The Society's County Representative for S.W. Middlesex and Bucks., Mrs. W. E. McMullen, has organised observers from our group members to cover our interests in this area. A report was made available to the Society's Nature Conservation Committee.

Cranford Park Survey. The keen activities of Hayes and Harlington Natural History and Antiquarian Society, who have taken over this study, which is situated in their area, has resulted in further reports covering geology, archaeology, local history, ornithology, entomology and botany. The absence of expert field leaders may regretfully result in the curtailment of this field study.

The group 1954 A.G.M. Exhibition provided members with an interesting range of exhibits:—

Geology. Miss M. M. Brown, Mr. R. J. Parsons—Photographs and specimens from upper sand and London clay of Oxshott Clay Pits, Surrey.

Entomology. Mr. C. W. Pierce—Two mounted collections of lepidoptera taken in the Borough of Heston and Isleworth during the year.

Ornithology. Mr. B. Coleman—A selection of stuffed birds, including the Sparrow Hawk, Cuckoo, and Little Auk. Dr. A. Anderson—Records of 168 species of birds observed by our group members.

Reptilia. Hayes and Harlington Natural History and Antiquarian Society—A vivarium containing living specimens of common lizard, slow worm, and common frog.

Our appreciation and thanks are due to Mr. C. E. Hubbard, O.B.E., Principal Scientific Officer at Kew, and to the following Society members for their papers at indoor meetings:—Baron Charles G. M. de Worms, M.A., Ph.D., F.R.I.C., F.R.E.S., M.B.O.U.; Percy Evans, M.A., F.G.S.; A. G. Leutscher, B.Sc., F.Z.S.; J. F. Shillito, B.Sc.; and to the following Society members for leading field meetings:—Miss M. M.

Brown, Miss M. Goom, Mrs. L. M. Small, and Messrs. T. L. Bartlett, B.A., M.B.O.U., S. W. Hester, F.G.S., V. G. A. Howlett, H. P. Medhurst, R. H. Ryall, L. Parmenter, F.R.E.S., C. W. Pierce, F. E. Wrighton.

A. ANDERSON, *Chairman*. E. EVERITT, *Secretary*.

Nature Conservation Committee's Report.

1955 has been an unusually quiet year for the Nature Conservation Committee.

It is satisfactory to note that, in *Bird Life in the Royal Parks*, it is stated that the Ministry of Works has reserved a small part of Osterley Park as a bird sanctuary and has planted reeds. Although there appears to be little of botanical interest, the provision of an excellent report on the bird life of the Park by Mr. H. J. Mackett and a reminder that Official Bird Observers are recognised by the Ministry of Works and that their annual report is now published in *Bird Life in the Royal Parks*, sufficed to convince the Nature Conservancy of the need of retaining Osterley Park in their list of Sites of Special Scientific Interest.

Mrs. McMullen is finding it difficult to obtain botanical reports on the Middlesex areas and in this she is not alone. It is a serious reflection on the interest of our botanical members in our Society's conservation work that the Nature Conservancy is obliged to ask the Botanical Society of the British Isles to provide basic botanical reports on several sites within the Society's area. The members of the Botanical Society who responded to this request were, however, members also of this Society.

During the summer, attention was drawn by the Fauna Preservation Society to a Press report of a drive against deer that were alleged to be damaging crops between Romford and Ongar in Essex. Since it seemed possible that the deer might be part of the Epping Forest herd of Fallow Deer, the matter was taken up with one of the Forest Verderers, but it was concluded that it was most unlikely that the Epping Forest herd was involved. There appear to be conflicting opinions concerning the status of this herd of black Fallow Deer considered by some to be the only one in Britain, but the Conservancy was advised that "the Forest supports one of the few remaining pure herds of black Fallow Deer in Britain". Further information from members would be welcomed.

Mr. Hall, our representative for Kent, has little to report other than that he has now visited most of the recommended areas in the Society's part of Kent.

During the summer, several of the Surrey areas were visited by Mr. Groves, the County representative, and it is gratifying to be able to report that he has found them satisfactory and observed nothing

to have occurred detrimental to their wild life amenities, although a member reported some rather drastic felling and continued digging near the gravel pits in the Chelsham-Nore Hill-Worms Heath area.

In the House of Commons on November 3rd, attention was called to the Ministry of Housing and Local Government's decision to allow the withdrawal of 11 acres of ground from the scheduled Green Belt at Riddlesdown near Purley, so that a lime-quarrying company might work the land. The precise part involved is not known, but as the whole of the area is not extensive, quarrying with its accompanying disturbances is likely to have some adverse effect on the wild life, at least in the immediate vicinity. The Minister, however, upheld his decision in spite of considerable local opposition.

A copy of the Croydon Borough Development Plan map and written statement was purchased earlier in the year for the Committee's reference files. This, together with the Surrey Development Plan already in its possession, will enable the Conservation Committee to be in a better position to study possible local effects when the plans for the proposed London to Brighton highway become known.

A confidential list of Geological Sites of Special Scientific Interest in England was submitted to the Secretary by the Nature Conservancy. Those within the Society's area were considered at a meeting of the Committee of the Geological Section and the Committee's views and suggestions were forwarded to the Conservancy.

The Nature Conservancy has issued a most interesting and attractive Report for 1955*. Short accounts are given of the 16 new Reserves added during the year and the account of the Conservancy's scientific work is impressive, that on Grasslands and the effects of Myxomatosis and on Roadside Verges and Hedgerows being of special interest to our members. "There is evidence that the Rabbit populations are gradually recovering from the lowest level reached immediately after the epidemic, particularly in south-eastern regions, where the first outbreak occurred . . . In many southern districts the density of Rabbits has been reduced to little more than that of Hares . . . Despite widespread rumours to the contrary, no evidence of an external switch of diet of predators in directions harmful to human interests has so far been traceable . . . An indirect effect which has been reported, though not scientifically verified, is that Grey Squirrels—also a serious pest—have been receiving increased attention from Foxes and Stoats as a convenient substitute for Rabbit in their diet". In formerly rabbit-grazed grasslands, exceptional flowering was noticeable among the Cowslip, Rock Rose, Pasque Flower and various orchids. The publication of the preliminary results of the Conservancy's experiments on the Effects of Spraying with Selective Weedkiller has resulted in the issue by the Ministry of Transport of a note "Spraying of Roadside Verges" for the guidance of highway authorities, in which conditions are laid down for their use of these weedkillers.

*Report of The Nature Conservancy for the year ended 30th September 1955.
H.M.S.O., 1955, 4/-.

The International Union for the Protection of Nature is holding its 1956 Conference in Edinburgh. The Chairman and Secretary of the Committee, with the collaboration of Messrs. E. B. Bangerter and H. A. Craw, drew up a programme of excursions to be offered by the Society to members of the Union *en route* to and from the Conference. The excursions were designed to show, within the Society's area, some of the habitats and places of interest, most of which have been scheduled by the Nature Conservancy as Sites of Special Scientific Interest.

CYNTHIA LONGFIELD, *Chairman*. C. P. CASTELL, *Secretary*.

Sectional Reports.

Archaeological Section.

In January P. G. Suggett gave a talk on Grims Dyke and other earthworks, which contained much right-up-to-the-minute information. In February Lawrence Tanner, M.V.O., conducted an extremely well-attended tour of Westminster Abbey, including the Chapter House crypt, the Library, and Muniment Room. In March the Chairman conducted a visit to 21 St. James's Square and the Arts Council premises at No. 4. In April the Society, under the guidance of the Chairman, visited the new premises of the National Trust at the Bluecoat School, S.W.1, followed by a topographical tour of Westminster, based on recent articles by Mr. L. Tanner on that subject. In May Mr. Cocksedge conducted a visit to Eynsford Church, after which the Section inspected the excavations on the site of the Lullingstone Roman Villa. In June G. F. Walsh took the Section on a tour of the East End, pointing out the many 18th century buildings still remaining; on arrival at Bethnal Green he took the party over the Bethnal Green Museum to see the products of the many weavers' houses which had been inspected en route. Later in the month T. L. Bartlett gave an interesting talk on the Monuments and Muniments of Harrow Church, illustrating it profusely with lantern slides, brass rubbings, reproductions of ancient manuscripts, etc. In July the Section paid a visit to Ware, and inspected the numerous historical remains in this extremely well-preserved town; after tea we visited Fanhams Hall, by kind permission of the Directors of Westminster Bank Ltd., where the principal objects of interest were the Queen Anne staircase, the artistic window hangings and the Japanese garden. In August a tour of the City was made, entitled Roman London. A visit was paid to the Roman exhibits in the new Guildhall Museum in the Royal Exchange, and the Roman pavement under No. 11 Ironmonger Lane. In September Miss Ida Darlington gave an extremely interesting talk on Coade Stone, illustrated with a very good collection of lantern slides and specimens. Later in the month a visit was paid to the Holborn district, where G. F. Walsh conducted us over Barnards Inn (now Mercers School), after which we inspected Ely Place and St. Etheldreda's Church.

In November Miss Ida Darlington conducted a visit to the Church of St. Bartholomew the Great, pointing out the remains recently uncovered, followed by a tour of the historical parts of St. Bartholomew's Hospital. In November Fishmongers' Hall was visited under the guidance of the Clerk to the Fishmongers Company. In December a joint visit was paid with the Geological Section to the Archaeological Institute, Regents Park, where we were shown over by the Director, V. Gordon Childe. The following week we visited the Courtauld Institute, Portman Square, W.1., and were extremely gratified to find this fine example of Adams Architecture in such a splendid state of preservation.

At the A.G.M. in November, after the usual business, the Chairman gave a talk entitled "The Influence of Sir Christopher Wren", illustrating it with lantern slides of modern buildings inspired by those of Wren.

A word of thanks should be paid in conclusion to the Committee, Mr. and Mrs. Cocksedge, Messrs. T. L. Bartlett, W. Mackintosh, E. A. Round, H. G. Singleton, G. F. Walsh, H. W. Payton, and last but not least, Miss Ida Darlington, for their very hard work during the year, and also to Mrs. Regan for her extremely good work as Secretary. Mr. Walsh deserves a special word of thanks for acting as unofficial photographer to the Section and presenting us with some very good examples of his art, produced by him during the year.

V. HOWLETT, *Chairman.*

Botanical Section.

Membership. The section now has 323 members, a decrease of 3 during the year. It will be the endeavour of the committee to see that membership is increased during the current year.

Committee. After many years in office Mr. D. H. Kent relinquished the Chairmanship in favour of Mr. E. B. Bangerter. The benefit of the former's experience and wide knowledge of the flora of our area is not lost to us, however, as he remains on the committee as Curator. Mr. Bangerter in his turn has handed over the Programme Secretaryship to Mr. P. C. Hall, whose enthusiasm as a field worker is a valuable asset in this office. We have also been without the long-standing assistance and expert advice of Mr. C. P. Castell, whose place has been taken by Miss E. M. C. Isherwood. The Chairman wishes to thank those members of committee who deputised for him during an illness at the beginning of his first year of office.

Indoor meetings. 2 General and 5 Sectional meetings have been held, with an average attendance of 27. Guest lecturers included such eminent botanists as Dr. Francis Rose, Dr. E. Marian Delf, and Dr. S. M. Walters.

Outdoor meetings. 17 excursions have been arranged, the average attendance being 10. It is pleasing to report that most of these were led by our members. Many were noted as suitable for beginners, and one or two were devoted to recordings for the Distribution-Maps

Sclieme. Some localities and plants seen are as follows:—Kingston to Richmond—*Sisymbrium orientale*, *Pentaglottis sempervirens*. Abbey Wood—*Cochlearia anglica* and other Thames foreshore plants. Barnes—*Rosa spinosissima*, *Ornithopus perpusillus*. Farningham—*Juncus tenuis*, *Isolepis setacea*. Whitewebbs Park—*Crepidatus variabilis* (Pers.) Fr., *Clitocybe nebularis* (Batoch.) Fr., *Tricholoma nudum* Fr. Hornchurch—*Agropyron caninum*, *Rumex maritimus* and a good aquatic flora at Berwick Pond, Rainham. Dartford—*Impatiens capensis*, *Echinochloa crusgalli*. Denham—*Juncus tenuis* var. *antheratus* (see Botanical Records) and flora of a water-meadow. Special meetings were arranged for bryophytes and fungi.

Reading Circle. This group is still active and would welcome new members. In a typical year two parts of *Watsonia* and two parts of the *Proceedings* of the B.S.B.I. are circulated.

Distribution-Maps Scheme. A sub-committee has been formed to assist with this scheme which was demonstrated by Dr. Walters at a General Meeting. The Society is responsible for the squares which fall within its Area and further excursions will be planned to investigate the flora of less well-known districts. Volunteer helpers are still welcome if they write to the Chairman informing him of localities in which they could work. Several cards have been prepared and sent to Headquarters at Cambridge.

E. B. BANGERTEK, *Chairman*. F. E. WRIGHTON, *Secretary*.

Ecological Section.

Membership has decreased by 4 to 225.

The Section has been responsible for the provision of one general meeting when Mr. H. V. Thomson lectured on "Myxomatosis and the Rabbit as a Biotic Factor". Sectional meetings held were: "Reports and Discussion on the Year's Work at Bookham and the Bombed Sites", a review by Mr. C. P. Castell of the University of London Extra-Mural lectures entitled "Woodland Ecology", a discussion on "The Colonisation of Bare Soil by Plants", a talk by Mr. A. G. Leutscher, illustrated with live animals, on "Some European Reptiles and Amphibians", and a discussion and exhibition on "Bombed Site Natural History", opened with a film, by Mr. W. G. Teagle.

Bookham Common Survey meetings were held on the second Sunday of each month, average attendance being 13 against 19 the previous year. The railway strike prevented many members reaching the June meeting.

An experiment was made of holding six summer Saturday afternoon meetings on the City Bombed Sites, and on the strength of this it has been decided to continue them for another year.

Five of the Bombed Sites and two of the Bookham Common meetings were held jointly with the Entomological Section.

Field meetings were also held at Effingham, under Mr. A. H. Norkett, to compare woodland vegetation on clay and chalk; to Hackhurst Downs, jointly with the Geological Section, led by Messrs C. P. Castell and A. W. Jones, where observations on the status of the scrub were made; and the annual visit to Headley Heath, under Mr. C. P. Castell, to study the regeneration of the vegetation.

One feature of this year is a greater interest in the mammals—an informal meeting being held with short notes, exhibits and discussion which is to be repeated in the next half-year's programme.

After further appeals for records of Grey Squirrels, including special requests, more information has been received but the response is still not adequate to give accurate knowledge of the distribution of the Grey Squirrel in the London Area. However, information from about 160 different localities was obtained from 73 observers. This investigation has been in operation since the beginning of 1954 and is being continued at least until the middle of 1956.

By the death in September, after a short illness, of Lt. Col. C. J. F. Bensley at the age of 61, the Section has lost a valued member of the Bookham Common Survey team. He joined the Society in 1946 and at once took up the study of the mollusca of the Common, visiting it at practically every one of the Section's official monthly visits from March 1946 to July 1955. Living in retirement at Hindhead for most of his period of membership, he was able to take part in little of the Society's activities other than the survey of Bookham. Here, however, he soon became an esteemed friend of many members of the survey team. He contributed regular annual progress reports and three valuable papers on the fresh-water mollusca to the *London Naturalist* in 1948, 1952 and 1954, as well as a short paper on the mollusca of the City Bombed Sites in 1952. Although specialising in mollusca, his natural history interests were wide as is apparent from the entries in his note-books, which have been left to the Society. He was president of the Haslemere Natural History Society at the time of his death and paid the Bookham Common Survey the compliment of organising a survey on similar lines at the Devil's Punchbowl, Hindhead, to which he invited the Section on several occasions.

Mr. A. H. Norkett reports that the reading-circles operated by the Section continue to flourish.

At the end of 1954, after a term of 13 years, Mr. C. P. Castell retired from the secretaryship of the Section and his work for the Section during those years must not go unthanked.

G. BEVEN, *Chairman.* A. W. JONES, *Secretary.*

Entomological Section.

The membership has been maintained at 198 during this year of consolidation. At the indoor meetings, lectures were given on 'Dragonflies in Britain: Identification and Habits', by Miss C. E. Longfield, and 'On Collecting and Studying Spiders', by Mr. T. H. Savory, M.A.

A new venture was an evening devoted to the 'King's College (London) Ecology Club Expedition to Spey Valley' when several of the students gave an amusing and instructive symposium to a large audience. A lecture to have been given by Dr. Colin G. Butler was postponed to 1956 on account of the railway strike. In its place Mr. W. J. Akester showed some excellent colour slides of Hawk-moths and spoke on his methods of photography. At the annual sectional meeting, Mr. M. Niblett read a paper on 'Some Insect Inhabitants of Thistles' and Mr. P. E. Smart gave a talk on 'The Distribution and Habits of Butterflies in Epping Forest'. Once again two evenings were devoted to exhibits. Attendance at these formal meetings averaged 46, an improvement on past years. In addition, the informal meetings held at 25 Eccleston Square were well attended and the discussions and exhibits were of considerable interest.

At these indoor meetings insects of many orders including several living specimens were shown by 45 members and friends whose comments added to the value of the meetings. These exhibits were reported in the *Entomologist's Monthly Magazine*, thanks to the kindness of the editors.

The field meeting programme was carried through in full in spite of the railway strike, while the weather throughout the summer was not unkind. The excursions were more numerous, 24 in all, and were attended by 145 members and friends with an average of 13 per meeting. The localities visited were:—Abbey Wood, All Hallows, Banstead Wood, Bookham, Box Hill, Cripplegate, Epping Forest, Farningham, Horsell Common, New Forest, Otford, Oxshott, Ranmore Common, Rickmansworth, Scratch Wood, Staines Moor, Whippendell Wood, and Wimbledon. They included new localities, and certain of them were in co-operation with the Botanical and Ecological sections, Chingford Branch, the Amateur Entomologists' Society, and Orpington Natural History Society, thereby introducing insects and their study to more naturalists.

The surveys at Bookham Common and Cripplegate have been continued by members of the section and further papers dealing with the survey of the London Area have been published. It is good to see the growing help in this survey work received from many entomologists who are not yet members of the Society, a graceful tribute to the value of the undertaking. A grant by the Royal Society for the cost of Mr. E. R. Nye's paper on London's Mosquitoes is gratefully acknowledged. With Mr. P. W. E. Currie's departure from the London area, Mr. E. W. Groves, who has already gathered information so successfully for the Nature Conservation Committee for the London Area, has agreed to act as Recorder for the Section. Our thanks are tendered to Mr. Currie for his great help over many years.

It has been most pleasing to receive letters, reprints, books and exhibits from our overseas members. The increased interest in our collections and library is also gratifying. During the year, additions of Coleoptera, Diptera, Hemiptera, Hymenoptera, Lepidoptera, Odonata, Trichoptera, and Leaf-mines were presented by Dr. J. Cloudeley-Thompson and Messrs. P. B. M. Allan, H. Britten, P. W. E. Currie, D.

G. Hall, E. Lewis, M. Niblett, L. Parmenter, E. Milne-Redhead, K. C. Side, L. W. Siggs and R. W. Weal. The library has expanded with the addition of over 300 books and reprints, gifts made by the late Mr. H. W. Andrews, Miss C. E. Longfield, Messrs. H. Britten, J. F. Burton, C. P. Castell, J. L. Cloudesley-Thompson, C. N. Colyer, F. Fincher, J. L. Harrison, A. E. Hick, M. T. Hindson, C. Garrett Jones, B. R. Laurence, J. E. Lousley, M. Niblett, D. F. Owen, L. Parmenter, J. F. Shillito, J. Sneyd Taylor, Baron de Worms, Harrow School and the Amateur Entomologists' Society.

The reading-circles have continued to increase in membership. During the year Messrs. R. W. J. Uffen and E. Lewis have assisted with the lantern and the sale of reprints respectively. Mr. Weal, who for many years gave so much time to the collections, has handed over the Curatorship to Mr. P. le Masurier and a team of specialists in the various orders. The services generously given to the section by these and others are appreciated by all. They help to make the organisation of an alive Section possible.

C. G. M. DE WORMS, *Chairman*. L. PARMENTER, *Secretary*.

The following report has been received from Mr. R. B. Benson, who has tendered his resignation as our representative on the Royal Entomological Society's Committee for the Protection of British Insects, on which he has served for 15 years:—

1. I have always maintained at meetings of the Committee that our main object should be to attempt to preserve habitats and not individual species. Our purpose primarily should be to preserve samples of as many different habitat types as possible. But, in selecting examples of the different habitats, preference should be given to areas known to contain some rare or interesting insects, on the assumption that a habitat known to have a rich fauna in a well-worked group of insects is likely to have a rich fauna in the unworked groups. The vast majority of insects are so little known that it cannot be said offhand whether any rare species occur in any given area; and important species to preserve are the rare or unobtrusive ones that have not yet been discovered or studied.

Apart from local and especially diurnal Lepidoptera and a few other well-known and conspicuous insects, the real danger to our fauna lies in habitat changes, not in over-collecting; and furthermore moderation in collecting will not save a species whose habitat is destroyed. Important habitats are of course relics of natural or nearly natural conditions, native or ancient woodlands, marshes, bogs, heaths, permanent grassland, etc. Therefore our main purpose should be to co-operate with the Nature Conservancy.

2. It is important to try to preserve any endemic British species or subspecies. And here again, as so little is known about the majority of British insects, this means we must try to preserve samples of the different races of all native species however ordinary. This is far more

important than efforts to try to encourage rare vagrants to establish themselves in Britain, when anyway they can be far more easily collected and studied across the channel.

3. One exception to the above is the Large Copper experiment in the Fenlands. This is worth pursuing to see whether the continental race of a species will approximate to the extinct British race merely by prolonged residence in the same locality: a most interesting experiment in ecology and subspeciation.

But such experiments of introduction are generally unwise and should not be undertaken without adequate recording.

4. For the public enjoyment of nature in National Parks and other reserved open spaces native butterflies and other conspicuous diurnal insects should be preserved.

5. For teaching purposes for schools and universities, and for the recreation of naturalists who have to live in cities, ordinary reserves should be set up that are easily accessible from densely populated areas.

Geology Section.

The membership of the Section now stands at 128 which includes 8 country associates, 7 school associates and 7 family members. This represents a slight fall of 2 as compared with the previous year. Mr. B. Ainsley, who has acted as Hon. Secretary since the formation of the Section in 1946, retired at the beginning of the year. Much of the Section's growth and success is due to his efforts and the thanks of the Section are due to him for the valuable work he has put in.

Indoor Meetings. The Geology Section arranged five indoor meetings during the year including its Annual General Meeting at which the Chairman, Mr. C. P. Castell, gave a talk on "Some Evolutionary Problems among Fossil Shells". The first meeting of 1955 was on February 1st and was a general meeting devoted to a lecture on "Swanscombe Man" by Dr. K. P. Oakley. In the following month at the first sectional meeting Mr. R. E. Butler gave a talk on the Geology of the Isle of Wight. This was followed on May 17th by a talk on "The London Clay and Tertiary Beds of West Sussex" given by Mr. E. M. Venables. In this talk Mr. Venables, an expert on the London Clay of the Bognor Regis district, described a number of aspects of his thirty years of research on the subject. The third and last sectional indoor meeting was held on September 30th and was devoted to a lecture on "Some Modern Methods of Dating the Past" by Dr. I. W. Cornwall.

Easter Field Meeting, 1955. The practice of holding a long field meeting at Easter was resumed during this year with a visit to the Isle of Wight. Members stayed at Sandown and the meeting was under the direction of Mr. R. E. Butler with Mr. B. Ainsley acting as field meeting secretary.

Good Friday was spent on the Sandown and Whitecliff Bay Sections where the whole of the strata from the Wealden Beds to the Oligocene is exposed. On the Saturday the party reached its maximum size at 20 and toured the island by coach visiting the Roman villa at Newport, Carisbrooke, Alum Bay, Freshwater and Brook. Evidence of the famous "pine raft" was seen at Brook. Easter Sunday afternoon was devoted to a walk from Ventnor to Shanklin. The junction of the Chalk with the Upper Greensand was seen at Ventnor and various Lower Greensand coastal sections were seen between Dunnose and Shanklin. Easter Monday was spent on the south coast of the island but the severe coastal erosion of the previous winter rather limited the scope of the programme to exposures near Whale Chine and Blackgang. The meeting concluded on the Tuesday with a visit to Sandown museum at the kind invitation of the curator, Mr. A. T. Grapes.

Other Field Meetings and Demonstrations. In February there was a demonstration by the Water Department of the Geological Survey. The first field meeting was in March when Dr. Himus took members on a visit to the West Wickham and Hayes districts of Kent. Two short field meetings were held in April, one at Elmstead Woods and Chislehurst and the other at Harefield. The latter was led by Mr. S. W. Hester and was a joint meeting with S.W. Middx. Group and the Ruislip Natural History Society. On May 8th Mr. R. A. Milbourne took a party to see sections in the Gault Clay near Sevenoaks whilst a week later Dr. W. S. Pitcher led a very successful coach tour to the Ipswich district. In the Ipswich district members were able to see numerous sections in the Crag deposits and many specimens including bones were collected. The railway strike in June unfortunately caused the cancellation of a meeting on the South Downs arranged for June 12th. On June 26th the Section joined with the Ecology Section in a meeting at Gomshall under Mr. C. P. Castell and Mr. A. W. Jones. June concluded with a short evening meeting to Hampstead Heath under the leadership of Mr. R. E. Butler. In July the Section revisited Hatfield under the leadership of Mr J. F. Wyley and Oxshott under the leadership of Miss M. M. Brown to see sections in glacial deposits and London Clay respectively which the Section has under special investigation.

The Autumn programme opened on September 11th with a visit to Horsley under the direction of Mr. B. Ainsley. On October 2nd Mr. E. M. Venables conducted a very pleasant meeting in the Bognor Regis area where members saw something of recent geological deposition at Pagham and the famous London Clay outcrop on the beach at Bognor itself. The year's field meeting programme concluded with a visit to the Plumstead district on October 15th under the direction of Mr. S. A. J. Pocock.

Field and Research. Investigation of the London Clay exposed in the pit at Oxshott has proceeded and Miss M. M. Brown reports further new records. Mr. J. F. Wyley has continued his collecting from the boulder clay and glacial gravels of the Hatfield district. It is regretted

that few temporary exposure reports suitable for publication have been received during the year.

The affiliation of the Society to the Geologists' Association will enable the Section to add to the fine set of G.A. Proceedings purchased very cheaply during the year for the Society's Library.

The thanks of the Society are due to all those who have contributed to the activities of the Section and to owners and agents who have kindly permitted members access to their properties.

C. P. CASTELL, *Chairman*. R. E. BUTLER, *Secretary*.

Ornithological Section.

The Section had another successful year, indoor and field meetings being well supported, although the nominal roll showed a decline to 897, compared with 917 in 1954 and 950 in 1953. 67 new members joined during the year. It is with deep regret that we have to record the deaths of Mr. S. Austin, a Past President of the Society, and of Miss D. Venour and Messrs. R. L. Collett, W. E. Gaze and E. H. N. Skrimshire.

The Section was responsible for ten indoor meetings, the average attendance at which was 116. The November meeting was devoted to the Sectional Annual General Meeting, followed by a Discussion on the Work of the Section. In December Dr. David Lack spoke on the "Natural History of the Swift". The 1955 series opened with a Joint Meeting with the British Trust for Ornithology at which Messrs. Frank A. Lowe, D. F. Owen and J. F. Burton, under the chairmanship of Mr. E. M. Nicholson, contributed to a highly interesting survey entitled "The Heron". February followed with two colour films, "Spring Comes to Cumberland" and "The Golden Eagle of the Scottish Highlands", with a commentary by their author, Mr. W. S. Cowen. At a General Meeting in March, Mr. E. M. Nicholson reviewed "The Present State of Ornithology in Britain" while in April, Mr. C. W. G. Paulson showed some excellent photographs of Waders. May brought two short papers by Members, Mr. E. R. Parrinder on "Recent Bird Books" and an interim report on "The Progress of the Beddington Sewage Farm Survey" by Mr. B. S. Milne. Members also provided the subjects for a July meeting, Mr. Robert Spencer reporting on "A Year's Work Ringing Starlings at Romford Sewage Farm" and Mr. K. H. Hyatt describing "Some Himalayan Birds and Mammals". In September, Mr. M. D. England introduced a series of his colour films illustrating a selection of the avifauna of Britain and Scandinavia. Finally, in October, the Rev. P. H. T. Hartley spoke on "The Methods and Pleasures of Bird-Watching".

Two successful informal meetings held during the year marked the inauguration of an activity new to the Section. On each occasion the Library at Eccleston Square was filled to capacity and there was an

opportunity for members and Committee to make each other's acquaintance in a way which is not possible at the Sectional meetings at Keppel Street. Light refreshments were dispensed by the ladies of the Section.

Forty-three field meetings took place during the period under review, covering typical habitats in the Society's area but including visits to such coastal districts as Dungeness, Sandwich and Walberswick. The total of 146 species noted during all meetings included Buff-breasted Sandpiper, Marsh Harrier, Bittern, Bearded Tit and Lapland Bunting.

Mr. H. A. Craw was elected Chairman in succession to Mr. P. W. E. Currie. Under Sectional Rules, Messrs. C. B. Ashby and D. Goodwin retired from the Committee, their places being taken by Messrs. R. P. Cordero and P. W. E. Currie. As the co-opted Junior Member, Mr. B. P. Austin succeeded Mr. G. L. Scott. Miss E. P. Brown took over the duties of Reading-Circle Secretary from Miss E. M. Goom, while Miss L. B. Langham continued to serve as Sectional Librarian. On his return from India, Mr. K. H. Hyatt resumed his duties as Curator, which had been undertaken during his absence by Mr. A. H. Betts, who continues as Field Meeting Secretary.

Mr. F. H. Jones accepted office as Editor of the *London Bird Report* and Chairman of the Records Committee when Mr. N. J. P. Wadley was compelled by pressure of business to resign. Following the resignation of Mr. M. G. Ridpath as Recorder for North of the Thames, Mr H. P. Medhurst has generously undertaken to add this office to his existing one of Recorder for South of the Thames. Records for Inner London continue to be handled by Mr. W. G. Teagle.

Attendances at the Library were disappointing, 78 books being borrowed during the period compared with 210 and 227 respectively in the two previous years. Four new titles were added during the year. Although a few members borrowed skins, and a number were loaned to the St. Bartholomew's Hospital Natural History Society for an exhibition, the collections were comparatively little used. No skins or eggs were added during the twelve months. The Reading Circle enjoyed a very successful year, all circles having increased their membership and all but one of the journals covering their cost. To put the finances of the Circles on a firmer footing, however, the subscriptions to three journals were slightly increased.

Owing to a change in the ringing year comparisons of ringing results with those of the previous year were not possible when this Report was prepared, but over 200 recoveries of birds ringed by Members had been reported. Many more warblers seem to have been ringed than formerly, including Chiffchaff, Garden Warbler and Lesser White-throat. Among other species ringed were Little Grebe, Redwing, Little Ringed Plover, Ringed Plover and Oystercatcher. Many new ringers gained valuable experience at the Dungeness Bird Observatory, in the management of which our Society participates.

The Survey of Beddington Sewage Farm reached its final stages and a full report will be published in due course. New arrangements for handling recorders' sheets have permitted earlier publication of the

London Bird Report and great credit is due to the Editor, Recorders and voluntary helpers for having the 1954 Report in the hands of members by mid-October 1955.

H. A. CRAW, *Chairman*. A. V. PETTIT, *Secretary*.

Ramblers' Section.

The membership of the Section remains the same.

Five evening meetings were allotted to us during the year and were filled as follows:—

“Here and there—by the Way,” which was a résumé of part of a ramble by the Section along the Pilgrims' Way, in a series of week-ends, given by Capt. R. F. L. White. Part two of this talk was given on November 22nd, when coloured slides were also shown.

In April Mrs. M. Crapnell gave a talk on “The History and Romance of Inn Signs”, illustrated by her own paintings. Two general meetings were sponsored by the Section: one in September by Mr. K. H. Hyatt on the “British Museum Nepal Expedition, 1954”, illustrated by colour films, and the second in October, “Nature Study with a Camera Fifty Years Ago”, by Mr. W. G. Vincent, when 100 lantern illustrations were shown.

The attendance at the Sectional meetings varied from 24 to 45. Of the outdoor meetings Saturday afternoon fixtures have again drawn the largest numbers of members and friends: 32 people visited the Henry VIII Wine Cellars and 38 attended Riverside Ramble, No. 2. We joined with two other Archaeological Societies in the last-named, when Mortlake and a fifteenth-century house, “Leyden House,” were visited. Other places visited were Woldingham, Temple Bar and Cheshunt Great House in conjunction with the Archaeologists' Section, Tring, a week-end in the New Forest, May 14th to 15th, Rickmansworth and the Chalfonts, Headley, Hever and Penshurst, using the Ramblers' excursion train, Riverside Ramble, No. 3, which led from Gunnersbury Park via Strand-on-the-Green to Richmond, Norbury Park and Polesden Lacey, Fulham Pottery—a mid-week excursion, Coutts' Bank and Leighton House.

We miss Mr. H. Spooner who so loyally worked for our Section and wish him all happiness in Wales, where he is now living.

It is with great regret that we record the death of one of our committee, Mr. S. Austin, who was a valued supporter of our Section over many years.

We should like to thank all the organisers of the very interesting excursions and all who have helped to make the Section a success. Miss H. Franks continued as Sectional Chairman during the year. Capt. R. F. L. White and Mr. G. F. Lawrence succeeded Miss E. Burt and Mr. A. W. Wheeler on the committee. Miss L. Boggis took over from Mr. Wheeler the post of Librarian.

Two reading-circles for the *Countryman* still continue.

L. JOHNS, *Secretary*. H. FRANKS, *Chairman*.

STATEMENT OF ACCOUNTS GENERAL

1954	<i>Receipts</i>						
£1002 17 9	Subscriptions—Current	£995 4 3	
38 6 0	Arrears	33 1 6	
16 2 9	Advance	20 8 0	
19 10 0	Entrance Fees	18 7 6	
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£1076 16 6							£1067 1 3
8 5 6	Interest on Post Office Account	8 2 1
11 12 5	Interest on Deposit Account	— — —
2 12 6	Interest on £75 War 3½% Stock	...	...	...	...	...	2 12 6
5 8 0	Interest on £180 Savings 3% Stock 60/70	...	...	...	...	...	5 8 0
— — —	Hire of Rooms	...	...	...	...	...	2 1 0
1 1 0	Donation	...	...	...	...	...	4 0 0
2 8 6	Annual General Meetings Teas	...	...	...	...	...	— — —
64 15 1	Balance at 31st October 1953	...	...	...	...	...	— — —
50 0 0	From Reserve Account	...	...	...	...	...	— — —
2 19 5	Deficit at 31st October 1954	...	...	...	...	2 19 5	
	Deficit for 1954/55	...	...	...	...	117 5 2	
<hr/>							
	Total Deficit at 31st October 1955	...	...	...	...	...	120 4 7

£1225 18 11

£1209 9 5

PUBLICATIONS

£65 18 11	Sales of Publications	...	...	...	...	...	£58 9 6
47 18 1	Sale of Christmas Cards, 1954	...	...	...	...	£32 15 3	
	„ 1955	...	...	...	...	18 0 0	
<hr/>							
							50 15 3
17 17 0	Advertisements—London Bird Report	...	...	...	...	...	12 5 0
26 0 0	Grant—Royal Society	...	...	...	...	...	25 0 0
— — —	Donation	5 0 0
	London Bird Report, No. 18, estimated	£200 0 0	
	Actual Cost	179 16 8	
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							20 3 4
527 11 9	Balance from General Account	517 5 4
<hr/>							
£685 5 9							£688 18 5

LEGACIES

£43 7 6	Balance at 31st October 1954	£43 7 6
	Bequest—S. Austin	50 0 0
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£43 7 6							£93 7 6

LIFE COMPOSITION

£325 0 0	Balance at 31st October 1954	£350 0 0
25 0 0	Life Member Subscription	— — —
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£350 0 0							£350 0 0

RESERVE

£125 0 0	Balance at 31st October 1954	£75 0 0
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£125 0 0							£75 0 0

R. E. BUTLER, *Hon. Auditor.*
A. W. JONES, *Hon. Auditor.*

Audited and found correct,
6th January 1956.

YEAR ENDED 31st OCTOBER 1955**ACCOUNT**

1954	<i>Payments,</i>									
£219 17 1	Rents	...	...	...	...	...	...	...	...	£192 10 6
106 19 4	Programme	...	...	...	...	...	...	...	...	127 14 8
42 19 3	Printing and Stationery	...	...	...	...	...	...	...	...	47 16 4
32 18 4	Postages—Secretary and Treasurer	...	...	...	...	...	...	...	...	36 12 5
4 13 6	Insurance	...	...	...	...	...	...	...	...	2 18 6
3 0 0	Gratuities	...	...	...	...	...	...	...	...	3 0 0
7 12 0	Subscriptions to other Societies	...	...	...	...	...	...	...	...	12 12 0
53 7 9	Sectional Expenses	...	...	...	...	...	...	...	...	66 8 6
3 0 0	Chingford Branch Expenses	...	...	...	...	...	...	...	...	0 17 6
5 0 0	South West Middlesex Group Expenses	...	...	...	...	...	...	...	...	15 12 6
2 4 0	"Birds of London Area" Expenses	...	...	...	...	...	...	...	...	11 14 1
91 0 0	Secretary's Honorarium and Expenses	...	...	...	...	...	...	...	...	109 16 3
99 2 5	Librarian and Curator's Expenses	...	...	...	...	...	...	...	...	53 14 11
21 0 0	Typewriter	...	...	...	...	...	...	...	...	— — —
5 13 6	Sundry Expenses	...	...	...	...	...	...	...	...	7 16 6
527 11 9	Publications Account	...	...	...	...	...	...	...	...	517 5 4
	Deficit at 31st October 1954	...	...	...	...	...	...	...	...	2 19 5

 £1225 18 11

 £1209 9 5

ACCOUNT

£462 12 6	London Naturalist—Printing and Postages	...	...	...	...	...	£489 8 5
200 0 0	London Bird Report—Printing and Postages	...	...	...	...	...	182 8 3
22 13 3	Christmas Cards, 1954—Printing and Postages	17 1 9

 £685 5 9

 £688 18 5

ACCOUNT

£43 7 6	Balance at 31st October 1955	£93 7 6
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 £43 7 6

 £93 7 6

ACCOUNT

£350 0 0	Balance at 31st October 1955	£350 0 0
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 £350 0 0

 £350 0 0

ACCOUNT

£75 0 0	Balance at 31st October 1955	£75 0 0
50 0 0	Transfer to General Account	— — —

 £125 0 0

 £75 0 0

Additions to List of Members

From February 1st, 1955, to February 1st, 1956.

Members:

- 1954 Lambourn, G., 10 Western Court, Rosebank Way, W.3. (Orn.) (Omitted from last published list.)
- 1955 Allen, Miss M. W. M., 148 Gloucester Place, N.W.1. (Orn.)
- 1955 Allen, R. F., 36 Albert Palace Mansions, Lurline Gardens, S.W.11. (Orn., Ecol.)
- 1955 Allibone, J., 17 Conway Road, N.15. (Ep. F., Orn.)
- 1955 Ambrose, J. A., B.A., 80 Esher Road, East Molesey, Surrey. (Bot., Orn.)
- 1956 Archer, Miss B. M., 39 Wenvoe Avenue, Bexleyheath, Kent. (Ecol., Ent.)
- 1955 Atkey, Miss B. M., T.A. Centre, Longbridge Road, Barking, Essex. (Arch., Orn.)
- 1955 Atkins, A. R. G., 593 Green Lanes, Palmers Green, N.13. (Orn.)
- 1955 Atkins, R. D., 593 Green Lanes, Palmers Green, N.13. (Orn.)
- 1955 Baron, J. T., 15 Nonsuch Court Avenue, Ewell, Epsom, Surrey. (Orn.)
- H 1955 Beard, P. E., 114 Birch Way, Hayes, Middx. (Orn.)
- 1955 Bedford, D. W., 103 Cornwall Road, Ruislip, Middx. (Orn.)
- 1955 Bedford, J. V., 33 Devonshire Place, W.1. (Orn.)
- 1956 Beisiegel, Miss H., 33 St. John's Hill Grove, S.W.11. (Bot., Orn., R.)
- 1955 Bird, Miss M. A., 14 Woodfield Gardens, New Malden, Surrey.
- 1955 Braddick, Mrs. H., 365 Camden Road, N.7. (Orn.)
- 1955 Bradley, Dr. R., 13 Eton Villas, N.W.3. (Arch., Orn.)
- 1955 Brooks, D. E., 62 Church Street, Chavley, Slough, Bucks. (Orn.)
- 1955 Buckler, Miss A. J., 22 The Drive, Goffs Oak, Waltham Cross, Herts. (Arch., Ep. F., Orn., R.)
- 1955 Burton, Miss E. M., 28 Croft Road, Bromley, Kent. (Bot., Ecol.)
- 1955 Capp, Miss K., 42 Exeter Street, Brighton, 5, Sussex. (Orn.)
- 1955 Carter, A. G. Tryon, 55 Hillcroft Avenue, Pinner, Middx. (Orn.)
- 1955 Carthy, J. D., M.A., Ph.D., F.Z.S., F.R.E.S., M.Inst.Biol., 32 Snakes Lane, Woodford Green, Essex. (Ent., Animal Behaviour)
- 1956 Chapman, Miss O. K., Flat 2, 57 Blenheim Gardens, Wallington, Surrey. (Orn.)
- 1956 Clark, Miss S. A., 333 Long Lane, Bexleyheath, Kent. (Ecol., Ent.)
- 1955 Colston, P. R., 5 Nevis Road, Balham, S.W.17. Orn.
- 1955 Corfield, W. G., 13 Airlie Gardens, Campden Hill, W.8. (Orn.)
- 1955 Cornwall, Miss B. E., 10 Highbury Place, N.5. (Ep. F., Orn.)
- 1955 Cox, Miss D., 50 Chestnut Avenue, Esher, Surrey. (Orn.)
- 1955 Croft, G. H., 58 Deacons Hill Road, Elstree, Herts. (Orn.)
- 1955 Crum-Ewing, Miss J. C., 33 Gilston Road, The Boltons, S.W.10. (Bot., Ecol., Geol.)
- 1955 Currie, Miss S., 54 Cromwell Road, S.W.7. (Orn.)
- 1955 Dady, W. H., c/o Trinidad Leaseholds Ltd., Trinidad House, 29-30 Old Burlington Street, W.1. (Orn.)
- 1955 D'Arcy, D. H., c/o Westminster Bank, Ltd, The Mall, Ealing, W.5. (Orn.)
- 1955 Davison, Miss J., Douglas Mansions, 120 Cromwell Road, S.W.7. (Orn.)
- 1955 Dolman, Miss E. W., 22 Addison Way, N.W.11. (Orn.)
- 1956 Donovan, K., 9 The Terrace, Barnes, S.W.13. (Orn.)
- H 1955 Dixon, Miss J. E., 12 Viscount Road, Stanwell, Middx. (Orn.)
- 1955 Dowling, Miss E. J., Togoland, Little Bushey Lane, Bushey Heath, Herts.
- 1955 Dunn, Miss B. F., 44 Colebrook Avenue, Hayes, Middx. (Bot.)
- 1955 Edgeworth, J., c/o R.H.Q., Welsh Guards, Birdcage Walk, S.W.1. (Orn.)
- 1955 Edmundson, D. N., 70 Godstone Road, Purley, Surrey. (Orn.)
- 1955 Ellis, Miss R. L., B.Sc., 25 Kew Gardens Road, Richmond, Surrey. (Ecol.)

- 1955 Elworthy, Miss N., 15 Lyndhurst Gardens, Pinner Hill, Pinner, Middx. (Orn.)
- 1955 Emmett, E. E., 39 Bollo Lane, Acton Green, W.4. (Orn.)
- 1955 Emmett, R. E., 39 Bollo Lane, Acton Green, W.4. (Orn.)
- 1955 Essam, Miss C. M., 17 Hunter House, Hunter Street, W.C.1. (Orn.)
- 1955 Evans, Miss V. J., 21 Haverstock Road, Malden Road, N.W.3. (Bot., Ecol.)
- 1955 Eve, A., 78 Grosvenor Avenue, Carshalton, Surrey. (Ent., esp. Coleoptera, Amphibians and Reptiles)
- 1955 Farmer, Miss D. M., 1 Mount View Road, Crouch Hill, N.4. (Bot.)
- 1955 Ford, Miss R., c/o Male, 270 Kew Road, Richmond, Surrey. (Orn.)
- H 1955 Forster, Miss J., 18 Broad Lane, Hampton, Middx. (Bot.)
- 1955 Fricker, H. A., 80 Cornwall Gardens, S.W.7. (Arch., Geol., Orn.)
- 1955 Fry, Miss S. M., 48 Clarendon Road, W.11. (Orn.)
- 1955 Fuchs, Miss P., 113 Devon Mansions, Tooley Street, S.E.1. (Arch.)
- 1955 Furnival-Jones, E. M., 6 South Square, N.W.11. (Orn.)
- 1956 Garrad, Miss J., 32 Ravenscroft Avenue, Golders Green, N.W.11. (Arch., Bot., Orn.)
- 1955 Gillham, Mrs. V. A., "Grove House", 140 Salmons Lane, Whyteleafe, Surrey. (Orn.)
- 1955 Gore-Browne, Miss E. M., The Turrets, 1 Chessington Road, Ewell, Epsom, Surrey (re-election). (Orn.)
- 1955 Gowing, J. H., 61 Wyatt Park Road, Streatham, S.W.2. (Ecol., Orn.)
- H 1955 Gray, Mrs. P. J., 74 Church Street, Staines, Middx. (Geol., Orn.)
- 1955 Green, Mrs. M., F.Z.S., 49 The Greenway, Colindale, N.W.9. (Herp., Orn.)
- 1955 Green, R. E., 7a Borneo Street, Putney, S.W.15. (Orn.)
- 1955 Hagarty, J. T., 39 Grovelands Road, St. Paul's Cray, Orpington, Kent. (Orn.)
- 1955 Harvey, E., 302 Bexley Road, S.E.9. (Orn.)
- 1956 Holland, W. E., 8 Baron Grove, Mitcham, Surrey. (Ecol., Orn.)
- 1955 Hunnybun, Miss N. K., 12 Osborn Mansions, Luxborough Road, W.1. (Orn.)
- 1956 Jones, H. I., 6 Kewferry Road, Northwood, Middx. (Bot., Ent., Orn.)
- 1955 Kavanagh, Mrs. F. G., 27 Finsbury Park Road, N.4.
- 1955 Kenny, D. C., 34 Maplethorpe Road, Thornton Heath, Surrey. (Orn.)
- 1956 Keystone, Miss S., 5 Queensbury Place, S.W.7. (Arch., Bot., Ecol., Ent., Geol., Orn.)
- H 1955 King, J. W., 647 Great West Road, Osterley, Middx. (Orn.)
- 1955 Knight, P., 39 Musgrove Road, New Cross Gate, S.E.14. (Orn.)
- 1956 Lancaster, B., 66 Chatterton Road, N.4. (Ecol., Ep. F., Herp., Orn.)
- 1955 Lane, A. W., 178 Ravenscroft Road, Beckenham, Kent. (Geol., Ent., esp. Coleoptera)
- 1955 Lee, Mrs. K., 59 Wentworth Avenue, Finchley, N.3. (Orn.)
- 1955 Linford, K. J., 36 Woodhall Gate, Pinner, Middx. (Orn.)
- H 1955 McIlwraith, Miss A., 3 St. Peter's Road, St. Margaret's, Middx. (Bot.)
- 1955 Manser, L. B., 176 Welling Way, Welling, Kent. (Orn.)
- 1956 Mansfield, B. F., 100 Dukes Avenue, New Malden, Surrey. (Orn.)
- 1955 Metcalf, F., F.R.S.A., Flat 5, 71 Station Road, New Barnet, Herts. (Bot., Ent.)
- 1955 Mills, A. B. M., 17 Minniedale, Surbiton, Surrey. (Geol., Orn.)
- 1955 Milner, C. A., 8 Torbay Road, South Harrow, Middx. (Bot., Orn.)
- 1955 Mond, Dr. N. C., 305 Salmon Street, Kingsbury, N.W.9. (Orn.)
- 1955 Morgan, O., 25 Fletcher Buildings, Drury Lane, W.C.2.
- 1955 Nicoll, J. H., 7 Belsize Avenue, N.W.3. (Orn.)
- H 1955 Norris, Miss V., 45 Woodfield Road, W.5.
- 1955 O'Callaghan, H., 28 Arundel Square, N.7. (Geol.)
- 1955 Palmer, Miss G. E., 56 Rusper Road, Wood Green, N.22.
- 1955 Pattison, Miss J., 35 William Mews, Lowndes Square, S.W.1. (Orn.)
- 1955 Potts, G. O., c/o 33 Fawnbrake Avenue, Herne Hill, S.E.24. (Orn.)
- 1955 Primmer, Miss B. P. R., 29 Albany Road, Stroud Green, N.4. (Orn.)
- 1955 Reid, D. A. R., 19 Circle Gardens, Merton Park, S.W.19. (Geol., Orn.)
- 1955 Rowling, M., M.B.O.U., F.Z.S., 57 Croham Road, Croydon, Surrey. (Orn.)

- 1955 Schwab, Mrs. M. O., 14 Mornington Avenue, West Kensington, W.14. (Orn.)
- 1955 Shearman, A. L., 20 Southover, Woodside Park, N.12. Orn.
- 1955 Sheldon, A., 24 Colburn Avenue, Hatch End, Middx. (Orn.)
- 1955 Simpson, G. V., 1 Colindale Avenue, St. Albans, Herts. (Geol., Orn.)
- 1955 Speakman, F. J., 22 Fernhill Court, Hempstead Road, Walthamstow, E.17. (Rep., Mam., Orn.)
- 1955 Stewart, Miss K. M., 73 South Side, Clapham Common, S.W.4. (Orn.)
- 1955 Stocks, Miss C. E. M., Flat 7, 18 Ladbroke Square, W.11. (Orn.)
- 1955 Thompson, Miss E. A., 5 Kelvington Road, Peckham Rye, S.E.15.
- 1955 Thompson, Miss M., 19 Birbeck Road, Enfield, Middx. (Arch., Bot., R.)
- 1955 Vallins, Miss V. M., 19 Seaton Gardens, Ruislip Manor, Middx. (Bot., Orn., R.)
- 1955 Walker, Dr. D. M., Royal Veterinary College, Royal College Street, Camden Town, N.W.1. (Orn.)
- 1955 Waters, W. E., 15 Wentworth Mansions, Keats Grove, N.W.3. (Orn.)
- 1955 Watkins, H. J., "Chiltern Cottage", 81 Chiltern Road, Sutton, Surrey. (Orn.)
- 1955 Webber, T. J., 18 Forest Way, Orpington, Kent. (Orn., Marine Life)
- 1955 Weedon, A. F. G., 6 Dalmeny Road, New Barnet, Herts. (Orn.)
- 1955 Wickenden, Miss P., 95 South Hill Park, Hampstead, N.W.3. (Bot.)
- 1955 Wild, Miss E., 15 Heathfield Park, Willesden Green, N.W.2. (Ent.)
- 1955 Williamson, G. R., 8 Woodside Avenue, Walton-on-Thames, Surrey. (Orn., Marine Bio.)
- 1955 Williamson, J., 44 Cranley Gardens, Muswell Hill, N.10. (Orn.)
- 1955 Wilson, Mrs. M. G. H., 69 Castletown Road, West Kensington, W.14. (Arch., R.)
- 1956 Wood, Miss B., 1135 Park Lane Hotel, W.1. (Arch., Bot., Ecol., Ent., Geol., Orn., R.)
- 1955 Woods, R. W., 20 Burley Close, Norbury, S.W.16.
- 1955 Wooldridge, F. L. F., 1 Eversfield Road, Richmond, Surrey. (Geol.)
- 1955 Wyborn, W. T., 29 Cornwall Drive, R.A.F., B.F.P.O. 40. (Orn.)

Family Members:

- 1955 Ambrose, Mrs. S., B.A., 80 Esher Road, East Molesey, Surrey. (Bot., Orn.)
- 1955 Baron, Mrs. E., 15 Nonsuch Court Avenue, Ewell, Epsom, Surrey. (Orn.)
- 1955 Braddick, R., 365 Camden Road, Holloway, N.7. (Orn.)
- 1956 Cornwall, H. S., 10 Highbury Place, N.5. (Arch., Ep. F., Orn.)
- 1955 Street, Mrs. D. J., 38 Lansdowne Road, Finchley, N.3. (Arch.)
- 1955 Weedon, Mrs. H. M., 6 Dalmeny Road, New Barnet, Herts. (Bot.)

Country Associates:

- 1955 Aitken, P., Raithby Cottage, Whitechurch, nr. Pangbourne, Berks. (Ent., Bot., Ecol., Geol.)
- 1955 Drane, R., 2 Council House, Matching Tye, Harlow, Essex. (Bot., Ent.)
- 1955 Flegg, J. J. M., 169 Napier Road, Gillingham, Kent. (Orn.)
- 1955 Munns, K. I., 1 Bisney Road, St. Albans, Herts. (Arch., Bot.)
- 1955 Nelson, J. M., The Shieling, Castletown, Isle of Man. (Ent., esp. Dipt.)
- 1955 Perowne, Miss D. M., 98 The Hornet, Chichester, Sussex. (Bot., Ent.)
- 1955 Polunin, O., Sutton Cottage, Charterhouse Hill, Godalming, Sussex. (Bot., Ent.)
- 1956 Whymant, R., 10 Whipperley Way, Luton, Beds. (Orn.)

School Associates:

- 1955 Barrett, W. E., "Bourne Combe", Caterham Drive, Old Coulsdon, Surrey. (Orn.)
- 1955 Bibby, A., 32 Palace Green, Addington, Croydon, Surrey. (Orn.)

- 1955 Card, J. F., 44 The Rise, Elstree, Herts. (Orn.)
 1955 Card, R. A., 44 The Rise, Elstree, Herts. (Orn.)
 1955 Chidwick, G. B. D., 71 Meadway, Barnet, Herts. (Orn.)
 1956 Curtis, Miss M. C., 61 Longfield Avenue, Hackbridge, Wallington, Surrey.
 (Arch., Bot., Orn., R.)
 1955 Devaney, L. J., 6/8 Prout Grove, Neasden, N.W. (Bot., Orn.)
 1955 Farnham, R. R., 31 Empress Drive, Chislehurst, Kent. (Geol.)
H 1955 Glenwood, R., 68 Hartham Road, Isleworth, Middx. (Orn.)
 1955 Harland, P. E., "Berries", Lower Farm Road, Effingham Common, Surrey. (Orn.)
 1955 Hoy, D. A., 89 Monkswood Avenue, Waltham Abbey, Essex. (Orn.)
 1956 Loftus, B. A., 40 Beaumont Court, Sutton Lane, Chiswick, W.4. (Ent.,
 R., Rep., Amph.)
 1955 Lyon, J. de B., 22 Washington Road, Worcester Park, Surrey. (Orn.)
 1955 Udell, P. L., 21 Hillside, Hay Lane, Kingsbury, N.W.9. (Orn.)

Affiliations:

- 1955 Perivale Naturalists Society, Community Centre, Perivale, Greenford,
 Middx. (Rep. & Sec.: Mrs. D. M. Owen)
 1955 Surbiton and District Bird Watching Society. (Rep. Member: Hockley
 Clarke, 79 Surbiton Hill Park, Surbiton, Surrey.

Ep. F. denotes Epping Forest Field Section.

H denotes South-West Middlesex Group.

JUNCACEAE**JUNCUS L.**

J. MARITIMUS Lam. *Sea Rush*. Brackish marshes by the tidal Thames. Local. V.-c. 16. Swanscombe Marshes; *F.R.* V.-c. 18. West Thurrock Marshes, fairly common, 1904, *C.S.N.*; *Hb.L.N.H.S.*; 1949; *J.E.L.* & *B.W.*

J. CONGLOMERATUS L. *Compact Rush*. Wet pastures, damp woods, marshes, pond verges, etc., with a marked preference for acid soils. Rather common and recorded in all the v.-cc., but much less frequent than *J. EFFUSUS*.

J. EFFUSUS L. *Soft Rush*. In similar situations to the preceding species. Very common throughout the Area. Forms with congested panicles are sometimes confused with *J. CONGLOMERATUS*.

× *INFLEXUS* = *J. × DIFFUSUS* Hoppe. V.-c. 17. Itchingwood Common, 1924; *R.W.R.*, teste *C.E.S.* Mitcham Common, 1928, *E.C.W.*; Littleworth Common, 1929, *J.E.L.*; *Hb.L.* Richmond Park; *B.W.* V.-c. 21. East Bedfont, 1946; Finchley Common, 1947; *D.H.K.* V.-c. 24. Alderbourne Watersplash, Fulmer, 1924; *E.B.B.*

J. INFLEXUS L., *J. GLAUCUS* Sibth. *Hard Rush*. Damp pastures, marshes, etc., particularly on heavy soils. Very common in all the v.-cc.

J. SUBNODULOSUS Schrank, *J. OBTUSIFLORUS* Ehrh. ex Hoffm. *Blunt-flowered Rush*. Marshes and ditches. Rare. V.-c. 16. Ditch at Barnes Cray, Crayford, 1944-46; *F.R.* V.-c. 17. Mitcham Common, 1932, *E.C.W.*; *Hb.L.*; 1935; *J.E.L.*

J. ACUTIFLORUS Ehrh. ex Hoffm. *Sharp-flowered Rush*. Wet meadows, marshes, swampy woods, etc. Common throughout the Area.

J. ARTICULATUS L. *Jointed Rush*. Wet meadows, heaths, etc., with a marked preference for acid soils. Common in all the v.-cc.

J. BULBOSUS L. agg., including *J. KOCHII* F. Schultz. Damp heaths, bogs and wet woodland-rides. Common throughout the Area.

J. KOCHII F. Schultz is probably not uncommon in the Thames valley but the records have been included in those for the last-mentioned species.

J. SQUARROSUS L. *Heath Rush, Goose Corn*. Bogs and damp heaths. Local. V.-c. 16. Pauls Cray and Keston Commons; *W.W.*; 1954; *G.M.B.* Hayes Common, 1931; *P.H.C.* V.-c. 17. Oxshott Heath; *W.W.*; 1925; *R.W.R.*; 1942; *D.H.K.* Wimbledon Common; *W.W.*; 1932; *P.H.C.*; 1954; *A.W.J.* Esher, 1922, *J.E.L.*; *Hb.L.* Shirley, 1922; *R.W.R.* Sheen Common, 1943-54; Richmond Park. 1949; Reigate Heath, 1951; *B.W.* V.-c. 18. Near "Wake Arms"; *L.B.H.* Snaresbrook; *R.W.R.* High Beach, 1910, *P.H.C.*; *Hb.L.N.H.S.* Great Monk Wood;

E.B.B. Old garden, Leytonstone, one plant, *G.L.*; *Essex Nat.*, 24, 245 (1935). Epping Forest, Theydon Bois, 1954; *R.M.P.* V.-c. 21. Harrow Weald Common, 1897, *C.S.N.*; *Hb.L.N.H.S.*; 1947; *B.W.* & *D.H.K.* Stanmore Common; *C.S.N.* & *L.B.H.* Hampstead Heath, 1921-27; *P.W.R.* Harefield Common; Hounslow Heath, 1944-54; *D.H.K.* Bedfont gravel pits; *A.W.W.*

J. COMPRESSUS Jacq. *Round-fruited Rush.* Marshes and alluvial meadows near the Thames. Locally plentiful. V.-c. 16. Stone Marshes, 1935, *E.C.W.*; *Hb.L.* V.-c. 17. Thorpe gravel pits, 1933; Thames bank W. of Hurst Park Racecourse, 1942, *J.E.L.*; *Hb.L.* Sheen Common, 1937; *C.A.*; 1943-53; East Molesey, 1950; Ham Common, 1955; *B.W.* Wimbledon Common, 1955; *J.E.S.** V.-c. 21. Hampton Court, *C.B.G.*; *Hb.S.L.B.I.*; *B.W.*; Laleham; Shepperton, Stanwell Moor; Shortwood Common, Staines, 1944-54; *D.H.K.* Walton Bridge, 1928, *E.C.W.*; *Hb.L.*; 1944-54; *D.H.K.*

J. GERARDI Lois. *Saltmarsh Rush.* Salt marshes and muddy places by the tidal Thames. Locally plentiful. V.-c. 16. Frequent in the marshes from Northfleet to Plumstead; *F.R.* V.-c. 17. Thames bank near Putney, 1931, *E.C.W.*; *Hb.L.* V.-c. 18. Grays, 1910, *P.H.C.*; *Hb.L.N.H.S.* West Thurrock Marshes, plentiful, 1904; *C.S.N.*; 1949; *J.E.L.* & *B.W.* Ripple Level, Barking, 1954; *J.E.L.* V.-c. 21. Hackney Marshes, 1913-14; *J.E.C.*

J. TENUIS Willd., *J. MACER* S. F. Gray. *Slender Rush.* Alien. N. & S. America. Naturalised in grassy places, by streams and in woodland rides. Not common. V.-c. 16. Farningham, 1926, *St.J.M.*; *Hb.L.* Abbey Wood, 1927; *J.E.L.* V.-c. 17. Whitemore Pond, Limpsfield Chart, 5 plants, 1924; gone by 1929; *R.W.R.* Worm's Heath, 1927; gravel pit, St. George's Hill, Weybridge, 1928, *J.E.L.*; *Hb.L.* Box Hill, 1925; *E.B.B.* Epsom Common, 1935; *P.H.C.* Esher Common, 1941, *A.E.E.*; *Hb.E.C.M.* Wimbledon Common, 1935; *C.A.*; 1954; Bookham Common; *A.W.J.* Sheen Common, 1942-56; Richmond Park, 1949-56; Oxshott Heath, 1950; *B.W.* V.-c. 21. By canal, Uxbridge, 1933, *J.E.L.*; *Hb.L.* Canal bank, Cowley, 1955; *D.H.K.* Hounslow Heath, 1945; *B.W.* & *D.H.K.* Copse Wood, Ruislip, 1947; *N.Y.S.* Canal bank by Springwell Lock, 1947; *J.P.M.B.*, *N.Y.S.* & *D.H.K.*; 1955; *B.W.*, *J.E.L.*, *T.G.C.* & *D.H.K.* Ken Wood, 1950; *E.B.Ba.* & *J.K.M.* Thames bank, Hampton Court, 1952; *R.A.B.* By St. Peter's Church, Hobart Place, S.W.1., 1954; *D.McC.* The var. *ANTHELATUS* Wieg. is reported from v.-c. 24. Old gravel pit near Denham, 1955; *L.N.H.S. Excursion*, det. *N.Y.S.*

J. BUFONIUS L. *Toad Rush.* Paths, roadsides, arable land, muddy pond verges, etc. Common throughout the Area.

J. PALLIDUS R.Br. Alien. Australia. Naturalised by water-filled gravel pits. V.-c. 21. Gravel pit, East Bedfont, 1945; *E.W.D.*;

*Smith, Mrs. J. E.

found to extend all round a very large pit, 1946; *B.W.*, *F.R.* & *D.H.K.*; *J.E.L.*; 1947; *B.W.*, *J.G.D.* & *D.H.K.* Believed to have been introduced with "shoddy" used on nearby arable land.

LUZULA DC.

L. SYLVATICA (Huds.) Gaud., *L. MAXIMA* (Reichard) DC. *Greater Woodrush*. Woods, usually on acid soils. Local. V.-c. 16. Near Chipstead; *W.W.* Abbey Wood, 1936; *P.H.C.* Joyden's Wood, 1919; *E.B.B.*; 1944; *F.R.* S.E. of Shoreham; N. of Cudham Grange; *W.W.* Darenth and Swanscombe Woods; *F.R.* V.-c. 17. Near Walton, 1930; *P.H.C.* By footpath, Headley to Walton-on-the-Hill, 1917; *E.B.B.* fide *C.E.S.* Featherbed Lane, Farleigh, 1924, *J.E.L.*; *Hb.L.* By Leigh Mill Pond, 1949; *R.W.R.* V.-c. 18. Ongar Park Wood, 1925; *L.J.T.*; plentiful; *R.W.R.* V.-c. 20. Wormley Wood, 1954; *R.M.P.* V.-c. 21. Bishop's Wood, a few plants, 1902; *C.S.N.* Pinner Wood, 1946; Barnet Gate Wood, 1947; *D.H.K.* Hendon Park; Scratch Wood, 1949; *R.A.B.* Ken Wood, 2 plants, 1949; *F.R.* Grimsdyke, Harrow Weald, 1948; *B.W.* & *D.H.K.* V.-c. 24. Black Park, 1954; *R.A.B.*

L. PILOSA (L.) Willd. *Hairy Woodrush*. Woods, hedge banks, etc. Common in all the v.-cc.

L. FORSTERI (Sm.) DC. *Forster's Woodrush*. Woods and hedge-banks. Locally plentiful in v.-cc. 16 & 17, rare elsewhere. V.-cc. 16 & 17. Frequent. V.-c. 21. Between Harefield and Northwood, 1937, *P.H.C.*; *Hb.L.N.H.S.* Mad Bess, Copse and Park Woods, Ruislip, 1945-46; *B.W.* Old Park Wood, Harefield, *B.W.*; *Hb.K.*; 1951; *R.A.B.* Scratch Wood; *B.W.* & *D.H.K.*

× *PILOSA* = *L.* × *BORRERI* Bromf. ex Bab. V.-c. 16. Holwood, 1921, *W.W.*; *Hb.B.* Abbey Wood, with both parents, 1950; *R.A.B.* Farningham Wood, 1954, *E.B.Ba.* & *P.C.H.* V.-c. 17. Lane near Walton-on-the-Hill, 1917, *E.B.B.*; *Hb.B.*, det. *C.E.S.* V.-c. 21. Stanmore Common, 1946; *D.H.K.* Scratch Wood, 1948, *B.W.* & *D.H.K.*; *Hb.K.*

L. MULTIFLORA (Retz.) Lej. *Clustered Woodrush*. Heaths and woods, chiefly on acid soils. Frequent throughout the Area. The var. *CONGESTA* (Thuill.) Koch is common.

L. CAMPESTRIS (L.) DC. *Field Woodrush*. Grassy places. Very common in all the v.-cc.

PALMACEAE

PHOENIX L.

P. DACTYLIFERA L. *Date*. Alien. N. Africa. Seedling date palms are a common sight on rubbish-tips throughout the Area.

TYPHACEAE

TYPHA L.

T. LATIFOLIA L. *Great Reedmace*. Reed-swamps, lakes, ponds, canals, slow flowing streams. Common throughout the Area.

T. ANGUSTIFOLIA L. *Lesser Reedmace*. In similar situations to the previous species. Local. V.-c. 16. Stone Marshes, 1930; *R.W.R.* Keston Common, by the lowest lake, 1954; *F.R.* V.-c. 18. Bog near "The Rising Sun", Epping Forest; *R.W.R.* Staples Pond; pond by Ambresbury Banks; *E.B.B.* Little Warley; *C.S.N.* Stifford; Passingford Bridge; *R.W.R.* V.-c. 20. Bricket Wood Ponds, 1938; *R.W.R.* V.-c. 21. Yiewsley, 1914-17; near Dawley, 1919-1920; *J.E.C.* Pinner Hill, 1908; *C.B.G.* Ruiship Reservoir; Grimsdyke, Harrow Weald; canal between Brentford and Hanwell, 1939-54; *D.H.K.*

SPARGANIACEAE

SPARGANIUM L.

A difficult and much misunderstood genus which is badly in need of revision.

S. ERECTUM L., **S. RAMOSUM** Huds. *Bur-reed*. In ditches, streams, rivers and ponds, etc. Common in all the v.-cc. The subsp. **NEGLECTUM** (Beeby) Schinz. & Thell., **S. NEGLECTUM** Beeby, is frequent.

S. SIMPLEX Huds. ex With. *Unbranched Bur-reed*. In similar situations to the preceding species. Probably common. V.-c. 16. Keston Ponds, 1921; *W.W.* Joyce Green; Darenth; *G.M.B.* V.-c. 17. Bookham Common, 1928; *E.B.B.*; *A.W.J.* Ashted Forest, 1921; river Mole near Leatherhead, 1941; West End Common, Esher, 1928, *J.E.L.*; *Hb.L.* V.-c. 18. Wood Street, 1900, *F.E.M.*; Golding's Hill Pond, Loughton, 1900, *C.S.N.*; Epping, 1910, *P.H.C.*; *Hb.L.N.H.S.* Pond near Ambresbury Banks; *E.B.B.* Walthamstow Marshes, 1952; *J.W.* V.-c. 20. Broxbourne, 1908; *P.H.C.* Colney Heath, 1913; *C.S.N.* V.-c. 21. Frequent. V.-c. 24. Colnbrook, *P.H.C.*

ARACEAE

ARUM L.

A. ITALICUM Mill. Alien. Europe. V.-c. 17. By river Thames between Kew and Richmond, one plant, 1950; *B.W.*; *R.A.B.* & *D.H.K.*

A. MACULATUM L. *Wild Arum*, *Lords-and-Ladies*, *Cuckoo Pint*. Woods, shady hedge banks, etc. Frequent throughout the Area. Plants with unspotted leaves are common.

LYSICHITUM Schott

L. AMERICANUM Hult. & St. John. Alien. N. America. Naturalised in a swamp. Very local. V.-c. 24. Black Park, 1950→; *D.H.K.*

ACORUS L.

A. CALAMUS L. *Sweet Flag*. In shallow water at margins of streams, rivers, canals and ponds. Local. V.-c. 16. Pond near Bickley; *D.McC.* & *F.R.* Holwood Park, 1954; *F.R.* V.-c. 17. Thames, East Molesey,

PLATE IX



Orchis simia Lam. S. of Shoreham, W. Kent, 1955.

J. E. Lousley.

PLATE X



Lysichiton americanum Hult. & St. John. Black Park, Bucks., 1954.

J. E. Lousley

1922; *L.J.T.* Chertsey Mead, 1921; *C.L.W.* Here and there by the Thames between Kew and Kingston; *R.W.R.* Burgh Heath, by pond, *E.C.W.*; *B.E.C.* 1938 *Rep.*, 61 (1939); 1950; *J.E.L.* V.-c. 18. Wake Valley and Golding's Hill Ponds, 1934; *B.T.W.* V.-c. 20. Totteridge Ponds, 1884; *J.E.C.*; 1919; *L.J.T.*; 1922, *J.E.W.*; *Hb.L.* Between Broxbourne and Rye House, 1930; *P.H.C.* V.-c. 21. Scattered localities by the Thames between Staines and Shepperton; canal bank at Harefield, Cowley, Denham, Hanwell, Brentford, Northolt and Greenford, 1939-54; *D.H.K.* Hampstead Heath Extension; Ken Wood, 1921; *P.W.R.* Between Pickett's Lock and Ponders End, 1934; *B.T.W.* Syon Park; *B.W.* & *D.H.K.* Pond near Stanmore Common, 1949; *R.A.B.*

CALLA L.

C. PALUSTRIS L. Alien. Europe. Naturalised in a pond. [V.-c. 17. Still at Boldermere, a little outside the Area, where, it has been known since 1874—see *Lond. Nat.*, 28, 28 (1949)]. V.-c. 21. Pond near Stanmore Common, 1946; *B.W.*; 1947-48; *D.H.K.*

LEMNACEAE

LEMNA L.

L. MINOR L. *Duckweed, Duck's-meat.* Floating on still waters. Very common throughout the Area. Only recorded in flower from v.-c. 21. Whitchurch Common, 1904; *L.B.H.* & *C.S.N.*

L. POLYRHIZA L. *Great Duckweed.* In still waters of ditches and ponds, and in the slower parts of streams. Local. V.-c. 16. Westernham; *G.M.B.* V.-c. 17. Near Weybridge, 1917; Bookham Common, 1919; *E.B.B.*; Sheepbell Pond, 1953; *A.W.J.* Ditch outside Kew Gardens, 1929, *J.E.L.*; *Hb.L.*; 1953; *J.E.L.* Ditch by Thames near Old Deer Park, Richmond, 1938; *J.B.E.* Epsom, 1935; *P.H.C.* V.-c. 18. Cooks Folly Wood; *R.W.R.* Pond by river Roding, near Chigwell, 1919; *L.J.T.* V.-c. 20. Hadley Green, 1949; *D.H.K.* V.-c. 21. Harefield; Denham; Staines Moor; Shortwood Common; Hayes; Northolt; Southall; Bushy and Hampton Court Home Parks; Poyle; Enfield, 1944-54; *D.H.K.* Thames, Strand-on-the-Green, 1955; *D.H.K.* Pond near South Mimms, 1945; *B.W.* Static water tank by the Thames, Millbank, S.W.1., *D.McC.*; *B.E.C.* 1943-44 *Rep.*, 761 (1946).

L. TRISULCA L. *Ivy-leaved Duckweed.* In ponds and ditches. Locally plentiful. V.-c. 17. Pond between Thorpe and Chertsey; Bookham Common, 1919; *E.B.B.*; 1950; *A.H.N.*; 1954; *A.W.J.* Burgh Heath, 1923; *W.W.*; 1928; *E.C.W.*; *Hb.L.* Tadworth; Epsom, 1937; *P.H.C.* Hurst Green, Oxted, 1922; *R.W.R.* New Pond, Merstham, 1950; *J.D.L.* Wimbledon Common; *A.W.J.* V.-c. 18. Pond at Hale End, 1912; *R.W.R.* Cuckoo Pits, Epping Forest, *J.H.G.P.*; *Lond. Nat.*, 24, 47 (1945). Loughton, 1952; *R.M.P.* V.-c. 21. Near Staines; *C.S.N.* Staines Moor, 1935; *P.H.C.*; 1944-54; *D.H.K.* Hampton Court Home

Park, 1931; *R.W.R.*; 1944-54; *D.H.K.* Whitchurch Common, in flower, 1906; *L.B.H.* & *C.S.N.* Harefield, 1927; *L.J.T.*; 1944-54; *D.H.K.* Stanmore Common, 1936; *P.H.C.*, 1944-54; Southall; Poyle; Yeoveney; Shortwood Common; Enfield, 1944-54; *D.H.K.* Clapton; *C.N.* Syon Park, 1947; *L.G.P.* & *R.M.P.* Bushy Park, 1944; ditch in front of Bedfont Church, 1945; *B.W.*

L. GIBBA L. *Gibbous Duckweed*. In still waters. Local, or overlooked. V.-c. 16. Plumstead Marshes, *F.J.H.*; *Fl. Kent*, 358. V.-c. 17. Pond at Thorpe, 1917, *E.B.B.*; *Hb.B.* Ditch outside Kew Gardens, 1929, *J.E.L.*; *Hb.L.* V.-c. 18. Rainham, 1905; *L.B.H.*; 1912; *C.S.N.* River Roding, Chigwell and Buckhurst Hill, 1919; *L.J.T.* V.-c. 21. River Lea and ditches, Clapton, common; *C.N.* Near Uxbridge, 1918; *L.B.H.* Harefield, 1927; *L.J.T.* Shortwood Common; Staines Moor; Bushy Park; Hadley Green, 1944-54; *D.H.K.* East Bedfont; *B.W.* Syon Park, 1947; *L.G.P.* & *R.M.P.* Pond E. of Park Wood, Ruislip, 1949; *F.E.W.* & *D.H.K.* Dell Pond, Golders Hill Park, 1949; *H.C.H.* & *D.H.K.* Uxbridge, 1946; *R.M.P.* Enfield, 1949, *D.H.K.*; *Hb.K.* Longford River, Stanwell, 1951, *J.E.L.*; *Hb.L.*

WOLFFIA Hork. ex Schleid.

W. ARRHIZA (L.) Hork. ex Wimm. In still waters. Very local. V.-c. 17. Pond on Burgh Heath, 1937 & 1943, *J.E.L.*; *Hb.L.*; 1954, *J.E.L.* V.-c. 21. West Bedfont; Hampton Court Home Park; *C.E.B.*

ALISMATACEAE

ALISMA L.

A. PLANTAGO-AQUATICA L. *Water-Plantain*. Beside slow-flowing streams, and canals, ponds and ditches. Common in all the v.-cc.

A. LANCEOLATUM With. *Water-Plantain*. In similar situations to the previous species, with which it is often confused. Probably frequent but distribution imperfectly known. V.-c. 17. Mitcham Common, 1930; Basingstoke Canal near Byfleet, 1949, *J.E.L.*; *Hb.L.* Stewponds, Epsom Common; *A.E.E.* V.-c. 18. Walthamstow Marshes, 1952; *J.W.* det. *E.B.Ba.* V.-c. 20. Near Rickmansworth, 1898; *C.S.N.*; Grand Union Canal, Rickmansworth, 1952; *D.H.K.* V.-c. 21. Shortwood Common, Staines, *B.W.*; *Hb.K.*; 1955; Harefield; Springwell, 1952-55; *D.H.K.* Ruislip Reservoir; *R.A.G.*

BALDELLIA Parl.

B. RANUNCULOIDES (L.) Parl., *ALISMA RANUNCULOIDES* L., *ECHINODORUS RANUNCULOIDES* (L.) Engelm. *Lesser Water-Plantain*. Pond sides. Rare, and decreasing. V.-c. 16. Chislehurst Common; *W.W.*; 1946; *F.R.*; 1954; *G.M.B.* V.-c. 17. West End Common, Esher, 1922; *H.J.B.* Richmond Park, 1933-39; *C.A.*; 1950; *B.W.* V.-c. 21. Brent Reservoir, Hendon, 1917; Finchley Common, 1917-28; *J.E.C.*; scarce, 1947; Hadley Common, one plant, 1947; *D.H.K.*

SAGITTARIA L.

S. SAGITTIFOLIA L. *Arrow-head*. Sides of streams, canals and ponds in shallow water. Common throughout the Area.

S. LATIFOLIA Willd. Alien. N. America. Naturalised in ponds. Very rare. V.-c. 17. Stew Ponds, Epsom Common, 1941, *J.E.L.*; *Hb.L.*

DAMASONIUM Mill.

D. ALISMA Mill., *D. STELLATUM* Thuill., *ACTINOCARPUS DAMASONIUM* (L.) Sm. *Thrumwort*, *Star-fruit*. Gravelly ponds. Rare, and uncertain in appearance from year to year. V.-c. 17. Headley Heath, 1897, *C.S.N.*; *Hb.L.N.H.S.*; 1927: two stations, 1944, *J.E.L.*; *Hb.L.* Oxshott Heath, 1899; Chipstead, 1901; *L.B.H.* Mitcham Common, 1924 & 1934, *D.G.C.*; Littlemore Common, Claygate, 1918, *J.E.W.*; West End Common, Esher, 1928 & 1934, *J.E.L.*; *Hb.L.* V.-c. 20. Barnet Gate, 1928, *J.E.C.*; *Hb.L.N.H.S.*

BUTOMACEAE

BUTOMUS L.

B. UMBELLATUS L. *Flowering Rush*. In ditches, ponds and streams and by river margins. Locally common. V.-c. 16. Shoreham; Wilmington Mill, 1933; Swanscombe Marshes, 1938; *P.H.C.* Stone Marshes, 1950; *H.M.P.* Dartford Mill Pond; *F.R.* V.-c. 17. Ham gravel pits, 1953; *H.T.C.* V.-c. 18. River Lea, Hale End; *R.W.R.* Old River, Chingford, very common, 1905, *J.O.B.*; Purfleet, 1940, *P.H.C.*; *Hb.L.N.H.S.* Copper Mills Reservoir, 1911; *C.L.C.* River Roding near Chigwell, 1919; *L.J.T.* Stanford Rivers, 1936; *P.H.C.* Walthamstow Reservoirs, 1951; *J.B.* V.-c. 19. Roydon, 1936; *P.H.C.* V.-c. 20. Colney Heath, 1913; *C.S.N.*; *Hb.L.N.H.S.* Near Broxbourne; *L.B.H.* Rickmansworth, 1937; *P.H.C.*; *Hb.L.N.H.S.* V.-c. 21. Canal near Uxbridge, 1904; Penton Hook, 1921; Hampton Court Park, 1909-14; *J.E.C.*; 1931; *R.W.R.*; 1950; *D.H.K.* Colne, near Harefield, 1909; *C.S.N.*; 1928; *J.E.C.* Near Folly Farm, Mill Hill; *E.M.D.* River Brent near Hanwell; *A.U.B.*; 1930-55; *D.H.K.* Stanwell Moor, 1913; *J.E.C.* Brent Reservoir, Hendon, 1949, *J.E.L.*; *Hb.L.*; 1954; *E.H.W.** Elstree Reservoir; Bushy Park; Staines Moor; Hounslow Heath; Greenford; Harefield, 1939-55; *D.H.K.* Syon Park; *L.G.P.* & *R.M.P.*

JUNCAGINACEAE

TRIGLOCHIN L.

T. MARITIMA L. *Sea Arrow-grass*. Salt marshes. Very local. V.-c. 16. Swanscombe Marshes, 1919, *P.H.C.*; *Hb.B.*; 1930; *P.H.C.* Erith to Northfleet; *F.R.* V.-c. 18. West Thurrock Marshes, 1904; *C.S.N.*;

*Warmington, E. H.

1949; *B.W. & J.E.L.* Grays, 1910, *P.H.C.*; *Hb.L.N.H.S.* Ripple Level, Barking, 1954; *J.E.L.*

T. PALUSTRIS L. *Marsh Arrow-grass*. Marshes. Rare. V.-c. 16. Damp calcareous meadow by river Cray, S.W. of North Cray, 1955; *F.R. & G.M.B.* V.-c. 17. Field by Dunnett's Farm, Buckland, 1928, *E.C.W.*; *Hb.L.* V.-c. 20. Marsh near Wormley Wood, 1954; *F.R. & R.A.B.*; 1955; *J.E.L. & B.T.W.* V.-c. 21. Lea Marshes, Clapton, 1883, *P.K.*; *Hb.L.N.H.S.* Bushy Park, 1949; *L.M.P.S.* Syon Park, 1947 *L.G.P. & R.M.P.*; 1955; *D.H.K.*

POTAMOGETONACEAE

POTAMOGETON L.

Mr. J. E. Dandy and Dr. G. Taylor have kindly named and commented upon much of the material in *Hb. Kent* and *Hb. Lousley*.

P. NATANS L. *Broad-leaved Pondweed*. Floating on ponds, lakes, slow parts of rivers and ditches. Rather common. V.-c. 16. Keston, 1931; *P.H.C.* V.-c. 17. Walton Heath, 1917; *E.B.B.* fide *C.E.S.* Limpsfield, 1921; Hurst Green, Oxted, 1922; *R.W.R.* Near Weybridge, 1922; *W.W.* Ashtead; Bookham, Norwood, 1930; gravel pits, Ham; Richmond Park, 1934; *P.H.C.* Bookham Common, 1953; *A.W.J.* V.-c. 18. Epping Forest, Walthamstow, 1923; *W.W.*; Cuckoo Pits; *J.H.G.P.*; "Wake Arms" pond, 1951; *L.N.H.S. Excursion*. V.-c. 19. Epping Lower Forest, 1951; *L.N.H.S. Excursion*. V.-c. 20. North Mimms; *E.M.D.* Broxbourne, 1910, *P.H.C.*; *Hb.L.N.H.S.* Colney Heath, 1912; *C.S.N.* Essendon, 1920; Rickmansworth, 1937; *P.H.C.* V.-c. 21. Common. V.-c. 24. Colnbrook; *P.H.C.*

P. POLYGONIFOLIUS Pourr., *P. OBLONGUS* Viv., *P. ANGLICUS* Hagstr. *Bog Pondweed*. Bog-pools, ditches and small shallow streams on acid soils. Local. V.-c. 16. Keston Bog, 1921; *W.W.* V.-c. 17. Moorhouse, near Limpsfield, local, 1922; *R.W.R.* Sheerwater Bog, Byfleet, 1949, *J.E.L.*; *Hb.L.* West End Common, Esher, 1950; *L.M.P.S.* det. *D.H.K.* Wimbledon Common; *C.A.* Bog on Oxshott Common, 1951; *F.R.* V.-c. 18. Epping Forest, Walthamstow, 1923; *W.W.* Bog N.E. of "Wake Arms", Epping Forest, 1951; *F.R.* V.-c. 24. Black Park, locally abundant, 1944-55; *D.H.K.*

[*P. ALPINUS* Balb. This local species has not been reported for the Area by our members but it formerly grew in ditches near the Colne between Harefield (v.-c. 21) and Rickmansworth (v.-c. 20). It still grows a little beyond our boundary near Byfleet (v.-c. 17).]

P. GRAMINEUS L. *Various-leaved Pondweed*. Canals. Very rare. V.-c. 17. Basingstoke Canal near Byfleet, 1931-49, *J.E.L.*; *Hb.L.*

P. LUCENS L. *Shining Pondweed*. Lakes, ponds, canals and slow streams. Locally plentiful. V.-c. 17. Sheerwater Canal near Byfleet,

1930, *J.E.L.*; *Hb.L.*, det. *J.E.D.* & *G.T.* V.-c. 18. Waltham Abbey, 1911, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 20. Lea Navigation Canal, St. Margarets; *J.G.D.* V.-c. 21. Ruislip Reservoir, in great abundance, 1934-55; canal, Yiewsley, scarce, 1944-55; Lea Navigation Canal, Enfield, abundant, 1947; *D.H.K.*

P. PRAELONGUS Wulf. *Long-stalked Pondweed.* River backwater. Very rare. V.-c. 17. Pool near Walton Bridge, 1940; *N.Y.S.* & *A.H.G.A.*

P. PERFOLIATUS L. *Perfoliate Pondweed.* Ponds, streams, rivers and canals. Local. V.-c. 16. River Darent, Horton Kirby, 1939, *J.B.M.*; *Hb.Mus.Brit.* V.-c. 17. Near Weybridge, 1922; *W.W.* V.-c. 20. Napsbury, 1910, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 21. Near West Drayton, 1910, *P.H.C.*; *Hb.L.N.H.S.* Near Harefield, 1909; *C.S.N.*; 1950; river Colne, Harefield to Cowley; Staines Moor; river Thames, Penton Hook; canal, Greenford Green and Alperton; Longford River, Stanwell; Lea Navigation Canal, Edmonton, 1944-55; *D.H.K.*

P. CRISPUS L. *Curled Pondweed.* Lakes, ponds, streams and canals. Rather common. V.-c. 16. Westerham, 1925; *R.W.R.* Dartford Marshes, 1930; near Abbey Wood, 1936; *P.H.C.* Hayes, 1938; *D.McC.* River Darent, Horton Kirby, 1939, *J.B.M.*; *Hb.Mus.Brit.* V.-c. 17. Common. V.-c. 18. Chingford; *P.H.C.* V.-c. 20. Shenley, 1912, *P.H.C.*; *Hb.L.N.H.S.* Lea Navigation Canal, St. Margarets, 1955; *J.G.D.* V.-c. 21. East Bedfont; near Sunbury; *B.W.* Uxbridge; Poyle; Hampstead Heath; Edgwarebury; Lea Navigation Canal, Tottenham to Edmonton; Round Pond and Lily Ponds, Kensington Gardens, 1944-55; *D.H.K.* Mimms Wash, 1953; *I.L.* V.-c. 24. Colnbrook, 1910, *P.H.C.*; *Hb.L.N.H.S.*

× *FRIESII* = *P.* × *LINTONI* Fryer. V.-c. 16. River Darent near Sevenoaks, 1938, *J.P.M.B.*; 1947, *J.E.L.*; *Hb.L.*

P. ACUTIFOLIUS Link. *Sharp-leaved Pondweed.* Lakes. Very rare. V.-c. 21. Shortwood Common, Staines, 1947, *B.W.*; *Hb.K.* det. *J.E.D.* & *G.T.*; 1955; *D.H.K.*

P. OBTUSIFOLIUS Mert. & Koch. *Blunt-leaved Pondweed.* Lakes, ponds, streams and canals. Locally abundant. V.-c. 17. Near Weybridge, 1922; 1949, *D.H.K.*; *Hb. K.* Sheerwater, Byfleet, 1930 & 1949, *J.E.L.*; *Hb.L.* Pen Pond, Richmond Park, 1954, *J.E.L.*; *Hb.L.* V.-c. 21. Ponds, Little Common, Stanmore, abundant, 1947-55, *D.H.K.*; *Hb.K.* det. *J.E.D.* & *G.T.*

P. FRIESII Rupr., *P. COMPRESSUS* auct. mult., *P. MUCRONATUS* Schrad. ex Sond. *Flat-stalked Pondweed.* Lakes and ponds. Rare. V.-c. 20. Lea Navigation Canal, St. Margarets, 1955; *J.G.D.* det. *J.E.D.* & *G.T.* V.-c. 21. Queen's River, Bushy Park, 1903, *A.L.*; *Hb.D.* Long Water, Hampton Court, 1949, *D.H.K.*; *Hb.K.* det. *J.E.D.* & *G.T.* Hampstead Ponds, 1949, *H.C.H.* & *D.H.K.*; *Hb.K.*

P. BERCHTOLDII Fieb., *P. PUSILLUS* auct. mult. *Small Pondweed*. Streams, canals and ponds. Local, but distribution imperfectly known. V.-c. 17. Basingstoke Canal near Byfleet, 1930, *J.E.L.*; *Hb.L.* Pen Pond, Richmond Park, 1952; *B.W.* V.-c. 21. Canal near Yiewsley, 1934, *J.E.L.*; *Hb.L.* Gravel pit, East Bedfont, 1946; Wyrardisbury River, Staines, 1947, *B.W.*; Staines Moor, 1950, *D.H.K.*; *Hb.K.* All det. *J.E.D.* & *G.T.*

P. PUSILLUS L., *P. PANORMITANUS* Biv. *Lesser Pondweed*. In similar situations to the previous species with which it is often confused. Local, but distribution imperfectly known. V.-c. 17. Gravel pits, Tamworth Lane, Mitcham, 1930, *J.E.L.*; *Hb.L.* V.-c. 21. Gravel pit W. of Hounslow Heath, abundant; Round Pond, Kensington Gardens, 1947, *D.H.K.*; *Hb.K.* Hampstead Ponds, 1949; Staines Moor, 1950; *D.H.K.* All det. *J.E.D.* & *G.T.*

P. TRICHOIDES Cham. & Schlecht. *Hair-like Pondweed*. Streams and ponds. Rare. V.-c. 17. Pen Pond, Richmond Park, 1952; *B.W.*; 1954; *J.E.L.* V.-c. 21. Colne between Harefield and Springwell, 1940; *J.G.D.* & *G.T.* Shortwood Common, Staines, 1947, *B.W.* & *D.H.K.*; canal backwater between Northolt and Southall, 1947, *D.H.K.*; *Hb.Mus.Brit.* Both det. *J.E.D.* & *G.T.*

P. PECTINATUS L. *Fennel-leaved Pondweed*. Canals, streams, ponds and lakes. Locally abundant. V.-c. 16. Keston Ponds, 1921; *W.W.* Stone Marshes; Swanscombe Marshes; Woolwich Arsenal; *F.R.* V.-cc. 17, 20, 21 & 24. Very common.

GROENLANDIA Gay

G. Densa (L.) Fourr., *POTAMOGETON DENSUS* L. *Opposite-leaved Pondweed*. Clear streams, ditches and ponds. Local. V.-c. 16. Brasted, 1924; *R.W.R.* V.-c. 17. Mitcham Common, 1924, *J.E.L.*; *Hb.L.* Ditch by Thames near Kew, 1948; *R.A.B.*; 1949; *L.N.H.S. Excursion*. V.-c. 20. Colney Heath, 1912; *C.S.N.* V.-c. 21. Wyrardisbury River, Staines; *B.W.* River Colne, Staines Moor; Shortwood Common, Staines; Longford River, Stanwell, 1944-55; *D.H.K.* V.-c. 24. Colnbrook, 1910, *P.H.C.*; *Hb.L.N.H.S.*; 1946; *D.H.K.*

RUPPIACEAE

RUPPIA L.

R. MARITIMA L., *R. ROSTELLATA* Koch. Brackish ditches and salt marsh pools beside the tidal estuary. Very local. V.-c. 16. Stone and Erith Marshes; *F.R.*

ZANNICHELLIACEAE

ZANNICHELLIA L.

Z. PALUSTRIS L. *Horned Pondweed*. Rivers, streams, ditches and ponds. Common. V.-c. 16. Wilmington, 1938, *P.H.C.*; *Hb.L.N.H.S.*

River Darent near Chipstead, 1933 & 1944, *J.E.L.*; *Hb.L.* River Darent, South Darent, 1939; *J.B.M.* V.-c. 17. Titsey, 1923; *R.W.R.* Leatherhead Millpond, 1921, *E.B.B.*; *Hb.B.* Ditch near Kew Gardens, 1930, *J.E.L.*; *Hb.L.* Ashted, 1940, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 18. Stanford Rivers, 1936, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 21. East Bedfont; *F.R.* Near Hounslow Heath; Staines; Stanmore Common; Whetstone; Lily pond, Kensington Gardens, 1944-50; *D.H.K.* The var. *PEDICELLATA* Wahlenb. & Rosen., *Z. PEDICELLATA* Fr., *Z. MARITIMA* Nolte, has been reported from v.-c. 16. Erith Marshes, 1937; Swanscombe Marshes, 1938; *P.H.C.* Stone Marshes, 1938, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 18. Rainham, 1912, *C.S.N.*; Purfleet, 1936, *P.H.C.*; *Hb.L.N.H.S.*

APONOGETONACEAE

APONOGETON L.f.

A. DISTACHYOS L.f. *Cape Pondweed*. Alien. S. Africa. Planted in ponds where it sometimes becomes naturalised. Rare. V.-c. 16. Keston Upper Pond, 1931; *P.H.C.*; 1953; *D.H.K.* V.-c. 21. Pond adjoining Stanmore Common, 1944-55; *D.H.K.*

CYPERACEAE

CYPERUS L.

C. LONGUS L. *Galingale*. Marshy places beside ponds and ditches. Rare. [V.-c. 16. Ditch in a field near Hever, just outside the Area, 1931, *J.E.L.*; *Hb.L.*] V.-c. 21. Verge of lake, Syon Park, naturalised and plentiful, 1947; *L.G.P.* & *R.M.P.* Long Water, Hampton Court, a large well established patch, 1954; *B.W.*

[*C. FUSCUS* L. *Brown Cyperus*. Damp places beside ponds and ditches. Extinct. V.-c. 21. Parson's Green, Fulham, 1830. *J.J.B.**; *Hb.L.*]

C. ERAGROSTIS Lam., *C. VEGETUS* Willd. Alien. S. America. V.-c. 17. Allotments, Shirley, Croydon, 1947, *C.T.P.*; *Hb.L.* Believed to have been introduced with onion seed; *J.E.L.*

ELEOCHARIS R.Br.

E. PALUSTRIS (L.) Roem. & Schult. *Common Spike-rush*. Marshes, ditches and at the margins of ponds and lakes. Frequent in all the v.-cc. The common form in the London Area is subsp. *PALUSTRIS* but the subsp. *MICROCARPA* S. M. Walters has been recorded from v.-c. 21. Riverside, Chiswick, 1937, *E.B.Ba.*; *Hb.Mus.Brit.* det. *S.M.W.*

E. UNIGLUMIS (Link) Schult. Marshes and wet meadows. Rare. V.-c. 16. Northfleet Brooks, 1946; *F.R.* N. of Shoreham in wet riverside meadows, 1954; *F.R.* & *F.S.E.F.** Damp calcareous meadow by river Cray, S.W. of North Cray, 1955; *F.R.* & *G.M.B.*

*Bennett, J. J.

†Fawkes, F. S. E.

E. MULTICAULIS (Sm.) Sm. *Many-stemmed Spike-rush*. Bogs and wet peaty places. Rare. V.-c. 16. Keston Bog; W.W.; 1921, R.W.R.; Hb.R.; 1924, J.E.L.; Hb.L.; 1937; J.B.M. V.-c. 17. Itchingwood Common, Limpsfield, 1929; J.C.R. Richmond Park, 1934; P.H.C. V.-c. 18. Epping Forest, 1925; J.C.R.

E. ACICULARIS (L.) Roem. & Schult. *Slender Spike-rush*. Wet sandy and muddy places at margins of lakes, canals and ponds. Local. V.-c. 17. Great Bookham Common, 1929; West End Common, Esher, 1932, E.C.W. & J.E.L. By drained Pen Pond, Richmond Park, 1945, B.W. [Basingstoke Canal, Scotland's Lock, Byfleet, just outside the Area, 1947, J.E.L.; Hb.L.] V.-c. 18. Pond near "Wake Arms", Epping Forest, 1951; L.N.H.S. *Excursion*. V.-c. 20. Totteridge, 1906; J.E.C. Aldenham Reservoir, Elstree, 1929, J.E.L.; Hb.L. V.-c. 21. Ruislip Reservoir, abundant, 1934-55; by Queen's River, Bushy Park, 1950; D.H.K. Hampton Court Park, 1944, J.E.L.; Hb.L. Shortwood Common, Staines, 1947; J.E.L., B.W., J.E.W. & D.H.K.

E. QUINQUEFLORA (F. X. Hartm.) Schwarz, *E. PAUCIFLORA* (Lightf.) Link, *SCIRPUS PAUCIFLORUS* Lightf. *Few-flowered Spike-rush*. Bogs. Very rare. V.-c. 20. Bog near Wormley Wood, 1954; F.R. & R.A.B.; 1955; J.E.L. & B.T.W.

SCIRPUS L.

S. SYLVATICUS L. *Wood Club-rush*. Marshes, wet places in woods and streamsides. Local. V.-c. 16. W. side of river near Eynsford; W.W. Westerham, 1925; R.W.R.; 1945, P.H.C.; Hb.L.N.H.S. Springpark Wood, West Wickham, 1926, J.E.L.; Hb.L. Marsh near the source of the Darent; G.M.B. V.-c. 17. Merstham; J.E.C. Weybridge, 1899, L.B.H.; Hb.H. Wimbledon Common; W.W. Oxted, 1921; R.W.R.; Oxted Mill, 1939, P.H.C.; Hb.L.N.H.S. Limpsfield, 1922, R.W.R.; Hb.R. Itchingwood Common, 1931; R.W.R. White Hill, near Caterham, 1924; Reigate Heath, 1929, J.E.L.; Hb.L. Putney Heath, 1936; C.A. Gravel pits, Ham, 1945; J.E.L., B.W. & D.H.K. V.-c. 21. Bishop's Wood, Hampstead, abundant, 1902, C.S.N.; Hb. L.N.H.S. By river Brent near Hendon, 1912-27; J.E.C. Marsh and lakeside, Ken Wood, 1946-55; D.H.K. Whitewebbs Park, Enfield, 1948; L.M.P.S.

S. MARITIMUS L. *Sea Club-rush*. In shallow water at the edge of the tidal estuary, and formerly by a pond near West Barnes. Locally abundant. V.-c. 16. Dartford Marshes, 1930, P.H.C.; Hb.L.N.H.S.; 1953; E.B.Ba. Stone and Swanscombe Marshes, 1938, P.H.C.; Hb. L.N.H.S. V.-c. 17. Between Putney and Barnes, 1929, J.E.L.; Hb.L. By Thames, Kew to Richmond, 1947; E.B.Ba. V.-c. 18. West Thurrock Marshes, 1904, C.S.N.; Grays, 1912, P.H.C.; Hb.L.N.H.S. By Barking rubbish-tip; Creekmouth, Barking, 1951; J.E.L. & J.C.C. V.-c. 21. By river Thames, Twickenham, a small patch, 1949; R.A.B.

S. LACUSTRIS L., *SCHOENOPLECTUS LACUSTRIS* (L.) Palla. *Bulrush*. In rivers, lakes and ponds. Locally plentiful. V.-c. 16. Pond, Chislehurst; *G.M.B.* V.-c. 17. River Mole near Leatherhead, 1921; *E.B.B.* Thames, Richmond to Kew, 1907, *C.S.N.*; *Hb.L.N.H.S.*; 1948; *E.B.Ba.* V.-c. 18. Old River near Chingford, 1903; *R.W.R.* Bog near "Rising Sun", Epping Forest; *R.W.R.* & *E.L.R.* River Roding, Theydon to Chingford; *C.S.N.* Hainault Forest, 1908; *P.H.C.* Near Eastwick, 1923; *L.J.T.* Loughton, 1952; *R.M.P.* Curtis Mill Green, 1954; *B.T.W.* V.-c. 19. Epping, 1955; *R.M.P.* V.-c. 20. Broxbourne, 1908; *P.H.C.* Radlett, 1912, *P.H.C.*; *Hb.L.N.H.S.* Colney Heath, 1912; *C.S.N.* River Lea, Cheshunt, 1952; *R.M.P.* V.-c. 21. Near Penton Hook Lock, 1905; *C.S.N.* River Colne near Harefield; *L.B.H.* Gunnersbury Park, Acton, *C.B.G.*; *Hb.S.L.B.I.*; Ruislip Reservoir, plentiful; between Denham and Harefield; Laleham; between Chertsey Bridge and Shepperton; Colnbrook; Staines Moor; West Drayton; Hanwell, 1944-55; *D.H.K.* Gravel pit near Walton Bridge, 1946; *B.W.* V.-c. 24. Colne Brook near Horton; *C.S.N.* River Colne, Denham, 1927; *L.J.T.*; 1955; *D.H.K.*

× *TRIQUETRUS* = *S. × CARINATUS* Sm., *SCHOENOPLECTUS CARINATUS* (Sm.) Palla. In shallow water at the edge of the Thames. Very rare and probably extinct. V.-c. 17. Putney, 1916; *J.E.C.* Hammersmith, 1917, *C.S.N.*; *Hb.L.N.H.S.* Mortlake, 1931; between Barnes and Kew, 1925; Kew Bridge, 1930; opposite Old Deer Park between Kew and Richmond, 1931, *J.E.L.*; *Hb.L.*

S. TABERNAEMONTANI C. C. Gmel., *SCHOENOPLECTUS TABERNAEMONTANI* (C. C. Gmel.) Palla. *Glaucous Bulrush*. Marshes and lakes. Rare. V.-c. 16. [Ditch in field near Hever, just outside the Area, 1933. *J.E.L.*; *Hb.L.*] Near Crayford Ness, Erith, 1951; *J.E.L.*, *B.W.* & *J.C.C.* Dartford Marshes, 1953; *E.B.Ba.* conf. *A.M.* V.-c. 17. Gatton Park lake, perhaps planted; *E.M.C.I.* V.-c. 21. Side of lake, Syon Park, 1955; *N.Y.S.*

S. TRIQUETRUS L., *SCHOENOPLECTUS TRIQUETRUS* (L.) Palla. *Triangular Bulrush*. Muddy banks of the tidal estuary. Very rare and probably extinct. V.-c. 17. Kew, 1907, *C.S.N.*; 1940, *P.H.C.*; *Hb.L.N.H.S.* Mortlake, 1916; *L.B.H.*; 1930, *J.E.L.*; above Kew Bridge, 1931, *J.E.L.*; *Hb.L.*

S. CESPITOSUS L., *TRICHOPHORUM CESPITOSUM* (L.) Hartm. *Deer-grass*. Bogs and damp heathy places. Very rare. V.-c. 16. Keston Bog, one clump, 1914-19; *W.W.*; seven clumps, 1947; *F.R.*

S. SETACEUS L., *ISOLEPIS SETACEA* (L.) R.Br. *Bristle Clubrush*. Damp heathy places and on bare sandy or gravelly margins of ponds and lakes. Local. V.-c. 16. Chislehurst Common, 1915; Darrack Wood, Orpington, 1921; *W.W.* Keston Common, 1937; *J.B.M.*; 1950; *A.W.J.* Joyden's and Petts Woods; *G.M.B.* V.-c. 17. Moorhouse, Limpsfield, local, 1923; Pain's Hill, Limpsfield, occasional in garden path, 1938,

R.W.R.; *Hb.R.* Mitcham Common, 1941; Farm Ravine, Wimbledon Common, 1942, *J.E.L.*; *Hb.L.* Sheen Common; Richmond Park, 1948; *R.A.B.* Bookham Common, 1950; *E.B.Ba.* V.-c. 18. Epping, 1911; *E.B.B.* V.-c. 20. Bricket Wood, 1938; *R.W.R.* V.-c. 21. Pinner; *W.W.* Watt's Common, Harefield; *D.H.K.* Home Park, Hampton Court, 1944; *B.W.* V.-c. 24. Gravel pit near Denham, 1955; *D.H.K.*

S. CERNUUS Vahl, *S. FILIFORMIS* Savi, non Burm. f., *S. PYGMAEUS* (Vahl) A. Gray, non Lam., *S. SAVII* Seb. & Maur., *ISOLEPIS CERNUA* (Vahl) Roem. & Schult. *Nodding Clubrush.* Wet places on commons. Very rare. V.-c. 17. Wimbledon Common, 1922, *J.E.L.*; *Hb.L.* conf. *H.W.P.*

S. FLUITANS L., *ELEOGITON FLUITANS* (L.) Link. *Floating Clubrush.* Ditches, ponds, marshes and bogs. Local. V.-c. 16. Keston Ponds, 1921; *W.W.*; 1950; *A.W.J.* Holwood Park, 1954; *F.R.* V.-c. 17. Edge of Black Pond, Esher Common, 1925; *E.B.B.* Putney Heath, 1936; *C.A.* Wimbledon Common, 1950; *E.B.Ba.* Oxshott Heath, 1951; *F.R.* Bookham Common; *A.W.J.* Richmond Park, 1945-1953; *B.W.* V.-c. 18. Snaresbrook Heath, 1900, *R.W.R.* & *E.L.R.*; *Hb.R.* Pond near Fairmaid, Epping Forest, 1907, *C.S.N.*; *Hb.L.N.H.S.* Epping; *A.W.J.* V.-c. 21. Whitchurch Common, 1912, *P.H.C.*; *Hb.L.N.H.S.* Bombed site near Holborn, 1950; *J.W.* V.-c. 24. Denham, 1954; *D.H.K.*

BLYSMUS Panz.

B. COMPRESSUS (L.) Panz. ex Link, *S. CARICIS* Retz., *S. COMPRESSUS* (L.) Pers., non Moench. *Broad Blysmus.* Marshy places. Very rare. V.-c. 16. Damp calcareous meadow by river Cray, S.W. of North Cray, 1955; *F.R.* & *G.M.B.*

ERIOPHORUM L.

E. ANGUSTIFOLIUM Honck., *E. POLYSTACHION* auct. *Common Cotton-grass.* Wet bogs. Local. V.-c. 16. Keston Bog, 1917; *P.H.C.*; 1923, *J.E.L.*; *Hb.L.*; 1936, *P.H.C.*; *Hb.L.N.H.S.* Wet disused railway cutting, Swanscombe Wood; *F.R.*; 1952; *H.M.P.* V.-c. 17. Esher Common, 1925; *E.B.B.* Wimbledon Common; *W.W.*; Farm Bog, 1937; *C.A.* Oxshott Heath, 1936, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 18. Epping Forest, near High Beach, 1900, *C.S.N.*; *Hb.L.N.H.S.*; Wood Street Bog; *R.W.R.*; "Wake Arms" Bog, locally abundant, 1951; *F.R.* V.-c. 20. Bog near Wormley Wood, 1955; *F.R.* V.-c. 21. Harefield, 1920; *J.E.C.*; 1945; *B.W.*; 1950; *D.H.K.* West Heath, Hampstead, 1939-55; *D.H.K.* The var. *ELATIUS* Koch is reported from v.-c. 17. Wimbledon Common; *W.W.*

[*E. VAGINATUM* L. This plant of peaty bogs has not been reported from the Area by our members but, until recently, it grew a little outside the boundary in v.-c. 17, at Sheerwater Bog, Byfleet; *J.E.L.*]

CAREX L.

Mr. E. Nelmes has named some of the specimens in Hb. Kent and Hb. Lousley; we are also greatly indebted to him for preparing the following key to the identification of the sedges of the London Area.

KEY TO THE CARICES OF THE LONDON AREA.

By E. NELMES.

1. Spike 1 *C. pulicaris*
1. Spikes 2 to numerous :
 2. Upper spike or spikes not normally wholly male; stigmas 2; utricles plano-convex or biconvex :
 3. Rhizome longly creeping :
 4. Upper and lower spikes normally female and middle ones male, usually numerous, rarely fewer than about 15; utricles ovate-lanceolate, 4-6 mm. long, margins winged *C. disticha*
 4. All spikes androgynaeceous (upper flowers male, lower female), about 3-8, utricles mostly elliptic or ovate, 3-4 mm. long, margins not winged *C. divisa*
 3. Rhizome not creeping, plant tufted :
 5. Bracts of the lower 1-2 spikes foliaceous :
 6. Only 1 spike in each lower bract-axil *C. remota*
 6. One to about 8 spikes in each lower bract-axil :
 7. Spikes 1- about 5 in each lower bract-axil; glumes light greenish to brownish, not whitish-margined *C. × Kneuckeriana*
 7. Spikes 1- about 8 in each lower bract-axil; glumes castaneous, widely whitish-margined *C. × Boenninghausenia*
 5. Bracts not foliaceous, absent or very slender :
 8. Spikes androgynaeceous (upper flowers male, lower female) :
 9. Glumes widely whitish-margined :
 10. Leaves 3-8 mm. wide, sheaths not fraying into fibres; utricles slenderly nerved *C. paniculata*
 10. Leaves 1.5-2.5 mm. wide, sheaths fraying into blackish fibres; utricles strongly nerved *C. appropinquata*
 9. Glumes not whitish-margined :
 11. Leaves 4-10 mm. wide (utricles 5-6 mm. long) *C. Otrubae*
 11. Leaves 1.5-4 mm. wide :
 12. Utricles strongly nerved on both faces .. *C. appropinquata*
 12. Utricles nerveless or slenderly few-nerved :
 13. Spikes rather to very numerous; bracts very slender but conspicuous in the lower part of the inflorescence; female glumes aristate; utricles 2.4-2.8 mm. long *C. vulpinoidea*
 13. Spikes about 4-12; normally ebracteate; female glumes mucronate; utricles 3.5-5 mm. long :
 14. Leaf-sheaths and sometimes the glume-like base of the bracteoles usually splashed vinaceous; ligular zone much longer than broad; female glumes 4-4.25 mm. long; utricles 4.25-5.5 mm. long ... *C. spicata*
 14. Leaf-sheaths and bracteoles never vinaceous; ligular zone from slightly longer than broad to broader than long :
 15. Inflorescence 1-4 cm. long; lower spikes contiguous or slightly separated from one another, all simple; female glumes 2.5-3.5 mm. long; utricles 3-4.5 mm. long *C. Pairaei*

15. Inflorescence 3-15 cm. long; lower spikes slightly to distantly separated from one another, each often branched into 2-5 other spikes :
 16. Inflorescence 3-7 cm. long and 7-10 mm. thick when the fruits mature; lower spikes from approximate up to 2 cm. apart from one another; female glumes 3-4 mm. long; utricles 4.75-5.25 mm. long ... *C. polyphylla*
 16. Inflorescence 4-15 cm. long and 5-7 mm. thick when the fruits mature; lower spikes up to distantly separated from one another; female glumes 3-4 mm. long; utricles 3.5-5 mm. long *C. divulsa*
8. Spikes gynaeandrous (upper flowers female, lower male) :
 17. Utricles 3.5-5 mm. long, margins winged :
 18. Utricles ovate, 4-5 mm. long, 1.75-2.25 mm. broad, about equalling the glumes *C. ovalis*
 18. Utricles narrowly lanceolate, 3.5-4 mm. long, about 1 mm. broad, apices exceeding the glumes *C. Crawfordii*
 17. Utricles 2-4 mm. long, margins not winged :
 19. Glumes pale or whitish with a green midrib; utricles 2-2.5 mm. long, beak 0.2-0.4 mm. long *C. curta*
 19. Glumes brownish or castaneous; utricles 3-4 mm. long, beak about 1 mm. long :
 20. Leaves 2-5 mm. wide; spikes 7-12, lateral ones 7-14 mm. long, forming an inflorescence 3-6.5 cm. long ... *C. elongata*
 20. Leaves 1.25-2 mm. wide; spikes 2-5, lateral ones 4-7 mm. long forming an inflorescence 1.5-3 cm. long ... *C. echinata*
2. Upper 1-5 spikes normally wholly male; stigmas 2 or 3; utricles plano-convex, biconvex, or more or less trigonous :
 21. Stigmas 2; utricles plano-convex or biconvex :
 22. Stems about 30-100 cm. tall; leaves 4-8 mm. wide; lower bracts much exceeding the inflorescence; male spikes 2-4; female spikes 3-10 cm. long; female glumes usually oblong-lanceolate and acuminate *C. acuta*
 22. Stems about 10-50 cm. tall; leaves 1.5-3 mm. wide; lower bracts from much shorter than to slightly exceeding the inflorescence; male spike 1 (sometimes a smaller one at its base); female spikes 1-3 cm. long; female glumes usually oblong-ovate and obtuse *C. nigra*
 21. Stigmas 3; utricles more or less trigonous :
 23. Utricles hairy or minutely scabrid :
 24. Utricles minutely scabrid (leaves glaucous; male spikes 1-3; utricles inflated-trigonous, ellipsoid or obovoid, nerveless, 2-3 mm. long, beak very short, entire) *C. flacca*
 24. Utricles hairy :
 25. Male spikes 2-3 (4); utricles 5-7 mm. long *C. hirta*
 25. Male spike 1; utricles 1.8-3 mm. long :
 26. Plant tufted or densely tufted; rhizome not creeping; utricles 2.5-3 mm. long *C. pilulifera*
 26. Plant not or scarcely tufted; rhizome creeping :
 27. Lower leaf-sheaths reddish-purple; female glumes purplish; utricles pale green, densely covered with whitish hairs, 1.8-2.2 mm. long *C. filiformis*
 27. Lower leaf-sheaths brown; female glumes brown; utricles light greenish, becoming brown with pale pubescence, 2.5-3 mm. long *C. caryophyllea*
 23. Utricles glabrous :

28. Male spikes 2-5, sometimes reduced to 1 in *C. acutiformis*; lowest bract longer, usually much longer, than the whole inflorescence :
29. Leaves 4-15 mm. wide, glaucous on the under-surface; male spikes stout, the terminal being about 4-10 mm. thick; utricles ribbed, olive-green to greyish olive-brown :
30. Male spikes 3-5, rarely fewer; male glumes acute or sub-acute, usually awned; utricles 5-6 mm. long, ovoid-conic, inflated-trigonous, not papillose *C. riparia*
30. Male spikes (1) 2-3; male glumes obtuse, often without awns; utricles 3.5-5 mm. long, ovoid, compressed-trigonous, papillose *C. acutiformis*
29. Leaves 2.5-5 mm. wide; male spikes (2-3) slender, the terminal being about 1.5-4 mm. thick; utricles nerved, pale yellow or greenish-yellow, sometimes tinged brown :
31. Leaves flat, green; utricles ovoid-conic, 6-8 mm. long, gradually or subgradually narrowed into the beak
C. vesicaria
31. Leaves more or less canaliculate, glaucous; utricles ovoid-globose, 4-5 mm. long, abruptly beaked *C. rostrata*
28. Male spike 1; lowest bract shorter to longer than the whole inflorescence :
32. Female glumes with awns about 2-5 times as long as the glumes themselves (leaves 5-12 mm. wide; female spikes 3-8 cm. long, becoming pendulous) *C. Pseudocyperus*
32. Female glumes muticous to mucronate or awned at the apex, awns not longer and usually much shorter than the glumes themselves :
33. Beak of the utricle up to about $\frac{1}{2}$ the length of the rest of the utricle, truncate or slightly notched at the apex :
34. Leaves 4-19 mm. wide; female spikes 3-6, about 3-20 cm. long :
35. Leaves 4-11 mm. wide; female spikes about 3-8 cm. long, about 2-3.5 mm. thick when the utricles mature *C. strigosa*
35. Leaves 8-19 mm. wide; female spikes about 6-20 cm. long, about 5-7 mm. thick when the utricles mature
C. pendula
34. Leaves 1.5-5 mm. wide; female spikes 1-3, about 1-3.5 cm. long :
36. Leaves sparsely hairy, not glaucous; bracts often crimped at the base; utricles beakless or nearly so *C. pallescens*
36. Leaves glabrous, glaucous; bracts not crimped; utricles shortly but distinctly beaked ... *C. panicea*
33. Beak of the utricle about $\frac{1}{4}$ as long to as long as the rest of the utricle, bidentulate to deeply bidentate at the apex :
37. Ligular zone, with a well developed ligule, about 5-15 mm. long; leaves 4-12 mm. wide; female spikes 2-6.5 cm. long *C. laevigata*
37. Ligular zone, with scarcely a ligule, about 0-3 mm. long; leaves 1-7 mm. wide; female spikes 0.5-4 cm. long :
38. Utricles, at least in the lower part of the spikes, with beaks usually becoming strongly bent (stems erect; leaves flat; female spikes 1-3 (4), 7-15 mm. long, rather distantly spaced; beak about as long as the rest of the utricle, which is often yellowish;
C. lepidocarpa
38. Utricles with straight or nearly straight beaks :

39. Lowest bract longer to much longer than the whole inflorescence, except the distantly spaced lowest bract of *C. demissa*; utricles usually yellowish :
40. Stems erect or subdecumbent; leaves not stiff, flat; 2-3 of the 2-5 spikes approximate at the apex of the stem but not usually crowded, remaining spike or spikes distant or basal; utricles about 3-4-mm. long, beak about as long as the rest of the utricle
C. demissa
40. Stems erect; leaves stiff, more or less canaliculate; usually all the 3-5 spikes more or less crowded at the apex of the stem, sometimes the lowest somewhat distant; utricles 2-3 mm. long, beak about half as long as the rest of the utricle ... *C. serotina*
39. Lowest bract shorter to much shorter than, rarely about as long as, the whole inflorescence; utricles not yellowish :
41. Female spikes 3-5, rather loose-flowered, about 3-5 mm. thick when the utricles mature; utricles nerveless, except for 2 sutures, 5-5.5 mm. long *C. sylvatica*
41. Female spikes 2-4, dense-flowered, stouter than in *C. sylvatica*; utricles distinctly nerved, 3-5.5 mm. long :
42. Leaves 3-6 mm. wide; female spikes 1.5-4 cm. long; glumes very dark red or blackish-red *C. binervis*
42. Leaves 2-4.5 mm. wide; female spikes 1-2.5 cm. long; glumes light to dark brown *C. distans*

C. PSEUDOCYPERUS L. *Cyperus Sedge*. Sides of slow-flowing streams, in ditches, ponds and lakes. Local. V.-c. 16. Abbey Wood, 1927; *H.J.B.* Dunton Green; *W.W.* Hayes; *D.McC.* Westerham Wood; *F.R.* V.-c. 17. Near Weybridge, 1901; near Thorpe, 1920; *L.B.H.* Hythe Fields, near Egham, 1917; *E.B.B.* Byfleet, 1901, *C.S.N.*; *Hb.L.N.H.S.* Barrow Green, Oxted, 1925; *R.W.R.* Gravel pit, Ham, 1931, *J.E.L.*; *Hb.L.* V.-c. 18. Near "Wake Arms", Epping Forest, 1904, *L.B.H.*; *Hb.H.*; pool near Ambresbury Banks, 1917, *E.B.B.*; *Hb.B.* Little Warley, very abundant, 1904; *C.S.N.* Curtis Mill Green, 1954; *B.T.W.* Rainham, 1955; *L.N.H.S. Excursion*. V.-c. 20. Near Wormley, 1917; Broxbourne, 1918; *L.B.H.* Dyrham Park, South Mimms, 1953; *I.L.* V.-c. 21. Bentley Priory, Harrow Weald, *C.B.G.*; *Hb.S.L.B.I.* Pond near Stanmore Common, 1949; *R.A.B.* Whitchurch Common, 1917; *L.B.H.*; 1936; *P.H.C.* Scratch Wood, Edgwarebury, 1945-55; Stanwell; Staines Moor; Osterley Park, 1933-55; *D.H.K.* Poyle, 1910; Colnbrook, 1917; *J.E.C.*; 1950; *D.H.K.* Finchley Common, 1920; Edgware, 1921; Clay Hill, Enfield, 1920; *J.E.C.* Whitewebbs Park, Enfield, 1954; *B.W.*

C. RIPARIA Curt. *Great Pond Sedge*. By slow-flowing rivers, canals, ponds and lakes. Common throughout the Area.

C. ACUTIFORMIS Ehrh., *C. PALUDOSA* Good. *Lesser Pond Sedge*. In similar situations to the previous species. Common in all the v.-cc.

C. VESICARIA L. *Bladder Sedge*. Damp places in woods and beside streams and ponds. Local. V.-c. 17. Between Weybridge and New Haw, 1917; *E.B.B.* Wimbledon Common, 1933; *C.A.*; Fishpond Wood below Wimbledon Common, 1945; *B.W.* By Boldermere, 1933, *J.E.L.*; *Hb.L.* New Pond between Merstham and Rockshaw, 1942; *A.E.E.* V.-c. 20. Totteridge, 1910, *P.H.C.*; Colney Furze Field, abundant in one pool, 1913, *C.S.N.*; *Hb.L.N.H.S.* Bayford Wood, 1955; *R.M.P.* conf. *E.N.* V.-c. 21. Highgate Wood, 1905, *C.S.N.*; *Hb.L.N.H.S.*; now destroyed, *C.S.N.*; *Trans. L.N.H.S.*, 1915, 42 (1916). Ruislip, 1909, *C.B.G.*; *Hb.S.L.B.I.* Ruislip Reservoir, 1945; *B.W.*; 1949; *D.H.K.* V.-c. 24. Rowley Wood near Black Park, 1954; *R.A.B.*

C. ROSTRATA Stokes, *C. AMPULLACEA* Good., *C. INFLATA* auct. *Bottle Sedge*. Wet peaty places. Very rare. V.-c. 17. Reigate Heath, 1952; *R.A.B.*

C. HIRTA L. *Hairy Sedge*. Rough grassy places, woods, roadside verges, etc. Common throughout the Area. The var. *HIRTIFORMIS* Pers. is reported from v.-c. 17. Hythe Fields, near Egham, 1917, *E.B.B.*; *Hb.B.* Between Waddon and Beddington, 1917; *P.H.C.*, and the var. *SPINOSA* Mort. from v.-c. 17. Mitcham Common, 1932, *E.C.W.*; *Hb.L.* A plant with compound spikes was gathered at Yiewsley (v.-c. 21) in 1901; *J.E.C.*

C. PENDULA Huds. *Pendulous Sedge*. Damp woods and shady places on heavy clay soils. Common in all the v.-cc.

C. SYLVATICA Huds. *Wood Sedge*. Woodlands. Common throughout the Area.

C. STRIGOSA Huds. *Broad-leaved Wood Sedge*. Open rides and by streams in damp woodlands. Local and rare. V.-c. 16. Crofton Woods near Orpington, 1923; *W.W.* Wood S. of Crofton Church, two plants; Petts Wood, about ten plants, 1954; *F.R.* V.-c. 17. Oxted Woods, plentiful in one ride, 1923; *R.W.R.* Wood at foot of Colley Hill, Reigate, 1917; *E.B.B.* conf. *C.E.S.*; 1933, *J.E.L.*; *Hb.L.* Damp hedge-row above Limpsfield, 1925; *E.B.B.* fide *C.E.S.* V.-c. 20. Ball's Wood, Hertford, 1925, *A.B.J.*; *Hb.L.* Whippendell Wood, 1950; *L.M.P.S.* det. *D.H.K.* Hoddesdon Park Wood, 1955; *J.G.D.*

C. LAEVIGATA Sm., *C. HELODES* Link. *Smooth Sedge*. Marshes and damp woods. Rare. V.-c. 17. Moorhouse, near Limpsfield, scarce, 1923, *R.W.R.*; *Hb.R.* teste *C.E.S.* Wimbledon Common, several plants in wet swampy wood on golf course, 1951; *R.A.B.* V.-c. 24. Black Park, 1949; *L.N.H.S. Excursion*; 1955; *D.H.K.*

C. BINERVIS Sm. *Green-ribbed* or *Moor Sedge*. Heaths and rough pastures on acid soils. Locally plentiful. V.-c. 16. Chislehurst;

Keston; Holwood Park; W.W. Petts Wood, 1951; J.D.L. V.-c. 17. Arbrook Common; W.W. Itchingwood Common, Limpsfield, 1919; R.W.R. Banstead Heath, 1930, E.C.W.; Hb.L. Wimbledon Common, 1935; C.A.; 1955; Richmond Park, B.W. St. George's Hill, locally common, 1953; R.A.B. V.-c. 18. Epping Forest near Theydon, 1904, C.S.N. & L.B.H.; High Beach, 1911, P.H.C.; Hb.L.N.H.S. Ongar Park Wood; A.W.J. V.-c. 20. Hertford Heath; J.G.D. V.-c. 21. Hampstead Heath, 1903; L.B.H.; now extinct there; D.H.K. Stanmore Common, 1948, B.W.; Hb.K. V.-c. 24. N. end of Black Park near Langley Corner, 1951; R.A.B.

C. DISTANS L. *Distant-spiked Sedge*. Marshes. Rare. V.-c. 18. Curtis Mill Green, 1954; B.T.W.

C. DEMISSA Hornem., C. TUMIDICARPA Anderss. Damp grassy and boggy places and woodland rides on acid soils. Local. V.-c. 16. Keston Bog, 1937 & 1948; J.B.M. By the lakes, Holwood Park, 1948; J.B.M.; 1954; F.R. Joyden's Wood, Bexley, 1954; F.R., P.C.H. & J.F.H. V.-c. 17. Wimbledon Common, 1886, J.Fr.; Hb.Kew; 1925 & 1942, J.E.L.; Hb.L. Sheen Common, 1925, E.N.; Richmond Park, 1931 & 1933, V.S.S. & E.M.-R.; Hb.Kew. Bookham Common, 1948; C.P.C. & E.B.Ba. Epsom Common, 1933, E.C.W.; Hb.L. Limpsfield district, 1925, R.W.R.; Hb.R. det. C.E.S. as C. OEDERI var. OEDOCARPA. V.-c. 18. Epping Forest near Theydon, 1904, L.B.H. & C.S.N.; Hb.L.N.H.S. det. D.H.K. V.-c. 20. Napsbury, 1910, P.H.C.; Hb.L.N.H.S. det. D.H.K. Bencroft Wood, near Bayford, 1955; F.R. V.-c. 21. Harefield Moor, 1945, B.W.; Stanmore Common, 1946; Ickenham Green, 1949; Staines Moor, 1947, D.H.K.; Hb.K.

[C. LEPIDOCARPA Tausch. Wet places on base rich soils. V.-c. 16. Holwood Park, 1948; L.N.H.S. *Excursion*. This seems an unlikely habitat and confirmation is required before the record can be accepted; J.E.L. & D.H.K.]

C. SEROTINA Mérat, C. OEDERI auct. Damp places on base rich soils. Very rare. V.-c. 16. Holwood Park, 1921 (as C. OEDERI var. ELATIOR Anderss.); W.W.

C. CARYOPHYLLEA Latourr., C. VERNA Chaix, non Lam., C. PRAECOX auct. *Spring Sedge*. Grassy and heathy places, especially on the chalk. Locally abundant. V.-c. 16. Maplescombe, 1923; W.W. Between Otford and Shoreham, 1930; P.H.C. Hayes Common, 1936; P.H.C. Holwood Park, 1954; F.R. Keston; G.M.B. V.-c. 17. Box Hill, 1901, L.B.H.; Hb.H.; 1955; D.H.K. Limpsfield Common, 1917; Fetcham Downs, 1919; Banks Common, Effingham, 1919; E.B.B. Woodcote Park, Epsom, 1927, E.C.W.; Hb.L. Beddington; Richmond Park, 1931; Cobham; Oxshott, 1938; P.H.C. Bookham Common; A.W.J. V.-c. 18. Cooks Folly Wood; R.W.R. & E.L.R. Brentwood, 1930; P.H.C. V.-c. 20. Broxbourne; P.H.C. V.-c. 21. Stanmore Common, 1921; P.W.R. Field near Bayhurst Wood, Ruislip, 1928; B.T.W. Rui-

slip Common; Harefield, frequent; Gutteridge Wood, Northolt, 1945-55; *D.H.K.* Syon Park; *B.W.* & *D.H.K.* Home Park, Hampton Court; *B.W.*

C. FILIFORMIS L., *C. TOMENTOSA* auct. *Dourny Sedge*. Damp meadows. Very local. V.-c. 17. N. end of Chertsey Mead, abundant, 1933 & 1936, *J.E.L.*; *Hb.L.* V.-c. 21. Near Shepperton, 1944, *J.E.L.*; *Hb.L.*; 1950; *D.H.K.*

C. PILULIFERA L. *Pill-headed Sedge*. Grassy and heathy places and open woods. Local. V.-c. 16. Hayes Common, 1936, *P.H.C.*; *Hb. L.N.H.S.*; abundant, 1938; *D.McC.* Keston Common; Holwood Park; Hollows Wood near Chelsfield, 1954; *F.R.* V.-c. 17. Headley Heath, 1917; *E.B.B.* Springpark Wood, Addington, 1919; *L.J.T.* Limpsfield Common, local, 1923, *R.W.R.*; *Hb.R.* Mitcham Common, 1923, *D.G.C.*; 1930, *J.E.L.*; *Hb.L.* Wimbledon Common, 1934; *C.A.* Epsom Common, 1935, *P.H.C.*; *Hb.L.N.H.S.* Bookham Common, 1951; *E.B.Ba.* Littleworth Common; *A.W.J.* V.-c. 18. Cooks Folly Wood; *R.W.R.* Highams Park, 1903, *R.W.R.*; *Hb.R.* High Beach, 1910, *P.H.C.*; *Hb.L.N.H.S.* Loughton, 1951; *R.M.P.* V.-c. 19. Epping Lower Forest, 1954; *R.M.P.* V.-c. 20. Batchworth Heath, 1902, *C.S.N.*; *Hb.L.N.H.S.* Colney Heath, 1951; *F.R.* Hertford Heath; *J.G.D.* V.-c. 21. Queen's Wood, Highgate, a few plants, 1902, *C.S.N.*; *Hb.L.N.H.S.* West Heath, Hampstead; Ken Wood; *H.C.H.* & *D.H.K.* Stanmore Common; *L.B.H.* & *C.S.N.*; 1950; Hounslow Heath, 1948; *D.H.K.* Mimmshall Wood, *C.B.G.*; *Hb.S.L.B.I.*; 1955; *D.H.K.* Grimsdyke, Harrow Weald, 1948; *B.W.* & *D.H.K.*

C. FLACCA Schreb., *C. GLAUCA* Scop., *C. DIVERSICOLOR* auct. *Glaucous Sedge, Carnation Grass*. Downs, dry calcareous grassy places, damp woods on heavy soils and marshes. Locally abundant. V.-cc. 16 & 17. Common. V.-c. 18. High Beach, 1910, *P.H.C.*; *Hb.L.N.H.S.*; Loughton, 1951; *R.M.P.* Curtis Mill Green, 1954; *B.T.W.* V.-c. 19. Epping Lower Forest, 1951; Galley Hill Wood, 1954; *R.M.P.* V.-c. 20. Near Croxley Mills; near Hatfield; Wormley West End; *C.S.N.* Bayford, 1954; *R.M.P.* V.-c. 21. Stanmore Common; *L.B.H.* & *C.S.N.*; 1950; *D.H.K.* Finchley Common, sparingly, 1901; *C.S.N.* Harefield; Springwell; New Years Green; Pinner Hill; Denham; Uxbridge; Ickenham Green; Ruislip; near Colnbrook; Staines Moor; Scratch Wood, Edgwarebury, 1939-55; *D.H.K.* By the Canal, Hampton Court, *B.W.*; *Hb.K.*

C. PALLESCENS L. *Pale Sedge*. Damp woods. Local. V.-c. 16. Crofton; Sidecup; Holwood Park; *W.W.*; 1954; *F.R.* St. Nimiad's Wood, near Farnborough, 1921, *E.B.B.*; *Hb.B.* Joyden's Wood, Bexley, 1954; *F.R.*, *J.F.H.* & *P.C.H.* Keston, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 17. Boxhill, 1901; woods between Moorhouse and Titsey, 1914, *C.S.N.*; *Hb.L.N.H.S.* V.-c. 20. Bricket Wood, 1938, *R.W.R.*; *Hb.R.*; 1947; *R.M.P.* Hoddesdon Park Wood, 1955; *J.G.D.* V.-c. 21. East Finchley, 1890; *J.E.C.* Highgate Woods, several plants, 1905, *C.S.N.*; *Hb. L.N.H.S.* Park Wood, Ruislip, 1949; *F.E.W.*

C. PANICEA L. *Carnation Grass*. Wet grassy places. Rather common. V.-c. 16. Dartford; Shoreham; Keston; Chislehurst; *G.M.B.* V.-c. 17. Banks Common; near Leatherhead, 1919; Bookham Common, 1925; *E.B.B.*; 1948; *E.B.Ba.* Box Hill, 1901, *L.B.H.*; *Hb.H.*; 1955; *B.W.* Moorhouse, local, 1924; *R.W.R.* Wimbledon Common, 1925, *J.E.L.*; *Hb.L.*; 1935; *C.A.*; 1955; *J.E.S.* V.-c. 18. Epping Forest near Theydon, 1904, *C.S.N.* & *L.B.H.*; *Hb.L.N.H.S.* V.-c. 20. Hadley Green, abundant, 1949; *H.W.Pa.* & *D.H.K.* V.-c. 21. West Heath, Hampstead, 1921; *P.W.R.* Harrow Weald Common; Stanmore Common; Ruislip Common, 1944-1955; *D.H.K.* Hadley Green, abundant, 1949; *H.W.Pa.* & *D.H.K.*

C. ACUTA L., *C. GRACILIS* Curt. *Graceful Sedge*. Banks of rivers, streams and canals. Local, and almost confined to the vicinity of the Thames. V.-c. 17. Weybridge, 1901, *L.B.H.*; *Hb.H.* Near Thorpe, 1920; *L.B.H.* Thames bank near Sunbury Lock, 1905; canal bank near Byfleet, 1908, *C.S.N.*; *Hb.L.N.H.S.* Chertsey Mead; by river Thames between Kew and Richmond, 1932, *J.E.L.*; *Hb.L.* V.-c. 21. By river Thames between Kingston Bridge and Hampton Court; *C.S.N.* & *L.B.H.*; 1944; *D.H.K.* Yiewsley; West Drayton; Staines Moor; near Brentford, 1944-55; *D.H.K.* V.-c. 24. Langley, 1905; *L.B.H.*

C. NIGRA (L.) Reichard, *C. ANGUSTIFOLIA* Sm., *C. GOODENOWII* Gay, *C. VULGARIS* Fr., *C. CESPITOSA* auct., *C. FUSCA* All. *Common Sedge*. Marshes, bogs, wet grassy places and beside water on acid soils. A very variable plant which is frequent in all the v.-cc.

C. ELONGATA L. *Elongated Sedge*. Marshes and damp woods. Very rare. V.-c. 17. Weybridge, 1904, *L.B.H.*; *Hb.L.N.H.S.* V.-c. 24. Ditch in a small wood N. of road from Slough to Uxbridge, 1940; *E.W.D.*

C. OVALIS Good., *C. LEPORINA* auct. *Oval Sedge*. Heaths, commons and rough grassy places on acid soils. Common in all the v.-cc. except 24, where although unrecorded it is likely to occur.

C. CRAWFORDII Fernald. Alien. N. America. V.-c. 16. Old pit, Green Street Green, near Farnborough, 1937, *J.E.L.*; *Hb.L.*

C. ECHINATA Murr., *C. STELLULATA* Good. *Star Sedge*. Damp grassy places and bogs on acid soils. Local. V.-c. 16. Pauls Cray Common; Keston; *W.W.*; 1924, *J.E.L.*; *Hb.L.*; 1937; *J.B.M.*; 1946; *F.R.* V.-c. 17. Wimbledon Common; *W.W.*; 1925, *J.E.L.*; *Hb.L.*; 1946; *D.H.K.* Moorhouse, Limpsfield, local, 1923; *R.W.R.* V.-c. 18. Epping Forest near Theydon; *L.B.H.* & *C.S.N.* V.-c. 20. Bricket Wood, 1938; *R.W.R.* Bog, Moor Park, 1953; *R.A.B.* V.-c. 21. Between Ruislip and Harefield, 1927; *L.J.T.* Harrow Weald Common, rare, 1945; Stanmore Common, scarce, 1947; *D.H.K.* Hounslow Heath; *A.W.W.*

C. REMOTA L. *Remote-spiked Sedge*. Ditches and damp shady places. Common throughout the Area.

C. CURTA Good., *C. CANESCENS* auct. *White Sedge*. Bogs. Very rare. V.-c. 17. Alder swamp, S.W. side of Reigate Heath, 1931 & 1944, *J.E.L.*; *Hb.L.* V.-c. 24. Bog at head of the lake, Black Park, 1945; *F.R.* & *D.H.K.*; 1949; *L.N.H.S. Excursion*.

C. OTRUBAE Podp., *C. VULPINA* auct. *False Fox Sedge*. Banks of rivers, streams, canals and ponds, also in marshes and wet meadows on heavy clay soils. Common in all the v.-cc. Formerly confused with *C. VULPINA* L., which is not known to occur in the Area.

× *REMOTA* = *C. × KNEUCKERIANA* Zahn. V.-c. 16. Darrack Wood, Orpington, 1921, *E.B.B.*; *Hb.B.* V.-c. 17. Lane near Banks Common, a vigorous clump, 1925, *E.B.B.*; *Hb.B.* V.-c. 21. Stanwell Moor, 1908; Ickenham Park, 1909, *C.B.G.*; *Hb.S.L.B.I.*

C. SPICATA Huds., *C. CONTIGUA* Hoppe, *C. MURICATA* auct. *Prickly Sedge*. Banks of rivers, streams and ponds, also in grassy places and by roadsides. Probably common but previously much confused with *C. PAIRAEI*. V.-c. 16. Keston, 1936, *P.H.C.*; *Hb.L.N.H.S.* V.-c. 17. Roadside, Box Hill, 1901, *C.S.N.*; 1936, *P.H.C.*; *Hb.L.N.H.S.* Bookham Common; *A.W.J.* Thames bank near Kew, 1925, *J.E.L.*; *Hb.L.* Thames bank, Barnes, 1939; *A.E.E.* det. *E.N.* Thames side, Mortlake, 1939; *J.B.E.*; 1949; *E.B.Ba.* V.-c. 21. Towing path, Hampton Court, 1926; *J.E.L.* By Walton Bridge, 1928, *E.C.W.*; *Hb.L.* By Thames, Chertsey Lock, 1905, *C.S.N.*; *Hb.L.N.H.S.* Hampton Court; *B.W.* Mimmshall Wood; Ruislip; Harefield; near Staines; Kingsbury; Greenford; railway bank, North Acton; Hadley Common; by Thames near Hammersmith, Regents Park, 1944-55; *D.H.K.* all det. *E.N.* St. Olaves Churchyard, E.C., 1945, *J.E.L.*; *Hb.L.* Near Hounslow Heath, 1929, *E.M.-R.*; *Hb. Kew.* Stanwell; *B.W.* & *D.H.K.*

C. PAIRAEI F. Schultz. Dry grassy places. Common, but often confused with the preceding species. V.-c. 16. Bickley; Lane End, near Darenth; Bessel's Green, *F.R.* Eynsford; Greenhithe; *G.M.B.* V.-c. 17. Little Woodcote, Wallington, 1933, *J.E.L.*; *Hb.L.* V.-c. 20. Panshanger Park, 1952; *R.M.P.* conf. *E.N.* V.-c. 21. Home Park, Hampton Court, abundant; Bushy Park, abundant; near Sunbury; *B.W.*; near Elstree; Hillingdon; between Harefield and Ickenham; near Field Heath; Colham Green; Ruislip; Hounslow Heath; Wyke Green; Hanwell, 1944-55; *D.H.K.* all det. *E.N.* Stanwell Moor; Staines; Chiswick; *B.W.* & *D.H.K.*

C. POLYPHYLLA Kar. & Kir., *C. LEERSII* F. Schultz, non Willd. Dry calcareous places. Rare. V.-c. 16. Farningham, 1954; *J.F.H.* & *P.C.H.* V.-c. 17. Chipstead Valley, 1927, *E.C.W.*; *Hb.L.* V.-c. 21. Above Harefield chalkpits, 1945, *D.H.K.*; *Hb.K.* det. *E.N.*

C. DIVULSA Stokes. *Grey Sedge*. Rough pastures, open woods and hedgebanks on various soils. Locally abundant. V.-c. 16. Hayes to Keston, 1931; Dartford Marsh, 1931; near Abbey Wood railway station,

1936; *P.H.C.* North Cray; *G.M.B.* V.-c. 17. Common. V.-c. 18. Highams Park, 1902, *R.W.R.*; *Hb.R.* Little Warley, 1910; *P.H.C.*; *Hb.L.N.H.S.* Purfleet, 1935; *P.H.C.* V.-c. 20. Near Totteridge railway station, 1900, *C.S.N.*; *Hb.L.N.H.S.* Hoddesdon Park Wood, 1955; *J.G.D.* V.-c. 21. Oxhey Lane, Pinner, 1902; *C.S.N.* & *L.B.H.* Hadley Common, 1907; *C.S.N.*; *Hb.L.N.H.S.*; 1946; *D.H.K.* Millfield Lane, Hampstead, 1924; *L.J.T.* Towpath, Hampton Court, 1928; *L.J.T.*; abundant; Moss Lane, Pinner; Uxbridge; Ruislip; Eastcote; Northwood; Stanwell Moor; Deacons Hill; near Willesden Junction; South Mimms, 1944-55; *D.H.K.* V.-c. 24. Horton, 1912, *P.H.C.*; *Hb.L.N.H.S.*

C. PANICULATA L. *Panicked Sedge*. Alder holts, swamps, marshes and bogs, also by rivers and canals. Local. V.-c. 16. Northfleet Brooks; *F.R.* V.-c. 17. Weybridge, 1900, *L.B.H.*; *Hb.H.* Wimbledon Common; *W.W.*; Stag Bog, 1935; *C.A.*; 1950; *A.W.J.* Boys Wood, Oxted, 1914; *E.B.B.* Near Limpsfield; *W.W.* Godstone Marsh, 1934; *R.W.R.* Reigate Heath, 1934, *J.E.L.*; *Hb.L.* Oxted Mill, 1936, *P.H.C.*; *Hb.L.N.H.S.*; 1939; *J.B.E.* V.-c. 20. Waltham Cross, 1902, *C.S.N.*; Rickmansworth, 1904, *C.S.N.*; *Hb.L.N.H.S.* Broxbourne; *P.H.C.* Panshanger Park; by river Lea, Wormley, 1952; *R.M.P.* V.-c. 21. Near Denham Lock, 1908; *J.E.C.*; 1955; *D.H.K.* Harefield, 1914; *J.E.C.*; 1955; *D.H.K.* West Drayton; *P.H.C.*; 1955; *D.H.K.* Uxbridge Moor, *C.B.G.*; *Hb.S.L.B.I.* Yiewsley; Thames bank near Walton Bridge, 1945-55; *D.H.K.* V.-c. 24. Denham, 1944; *D.H.K.* The var. *SIMPLEX* Peterm. is reported from v.-c. 17. Alder copse, Portersgate Farm, Godstone, 1934, *J.E.L.*; *Hb.L.*

× *REMOTA* = *C. × BOENNINGHAUSENIANA* Weihe. V.-c. 17. Alder copse E. of Reigate Heath, 1933, *J.E.L.*; *Hb.L.*; 1939, *E.N.*; *Hb. Kew.*

C. APPROPINQUATA Schumach., *C. PARADOXA* Willd., non J. F. Gmel. Marshes on calcareous humus-rich soils. Formerly locally plentiful in one small area but now probably extinct as the result of gravel digging operations. V.-c. 21. Uxbridge Moor, 1910, *C.B.G.*; *Hb.S.L.B.I.* Harefield, 1909, *A.L.*; 1920, *J.E.C.*; *Hb.Mus.Brit.*; near Springwell Lock, Harefield, 1936, *J.E.L.*; *Hb.L.*

C. DISTICHA Huds. *Brown Sedge*. Marshes and damp grassy places. Local. V.-c. 16. Swanscombe Marshes, 1919, *P.H.C.*; *Hb.B.* Stone; *W.W.* Northfleet Brooks; *F.R.* Meadows by river between Eynsford and Shoreham; *G.M.B.* V.-c. 17. Near Weybridge, 1922; Wimbledon Common; *W.W.*; Stag Bog, 1936; *C.A.* Mitcham Common, 1937; *L.P.* det. *J.E.L.* V.-c. 20. Hertford Heath; *J.G.D.* V.-c. 21. Springwell; Harefield; Yeoveney; Staines Moor, plentiful, 1944-55; *D.H.K.* Syon House grounds, 1946; *B.W.* & *D.H.K.*; 1955; *N.Y.S.* & *D.H.K.* W. of Shepperton; *B.W.*

C. DIVISA Huds. *Divided Sedge*. Ditches and grassy places by the tidal estuary, rarely inland, on dry grassy banks. Locally abundant. V.-c. 16. Stone; *W.W.*; Stone and Abbey Wood Marshes, 1935, *P.H.C.*;

Hb.L.N.H.S.; Erith and Plumstead Marshes; Northfleet Brooks, 1946; *F.R.* Swanscombe Marshes, 1919, *P.H.C.*; *Hb.B.*; 1930; *R.W.R.*; 1946; *F.R.* Joyce Green; *G.M.B.* V.-c. 17. Thames embankment between Putney and Barnes, 1932 & 1943; Mitcham Common, 1935; grassy slope, Richmond Park, 1935, *J.E.L.*; *Hb.L.* V.-c. 18. Grays, 1935, *P.H.C.*; *Hb.L.N.H.S.* Ripple Level, Barking, 1954, *J.E.L.*; *Hb.L.*

C. PULICARIS L. *Flea Sedge*. Marshes on humus-rich soils. Very rare. V.-c. 17. Epsom Common, 1936, *R.W.R.*; *Hb.R.* Wimbledon Common, 1946, *J.W.B.*; *B.W.* & *E.W.D.* V.-c. 21. Stanmore Common, 1921; *P.W.R.*; 1946; *D.H.K.*

C. VULPINOIDEA Michx. Alien. N. America. Established by a small marshy pond; elsewhere as a casual. Very local. V.-c. 16. Green Street Green, near Farnborough, 1937, *J.E.L.*; *Hb.L.* V.-c. 17. Damp depression (Workhouse Pond), Tadworth, 1950, *C.T.P.*; *Hb.L.* det. *J.E.L.*; still in fair quantity, 1955; *J.E.L.*, *B.W.*, *B.M.C.M.*, *C.T.P.* & *A.W.W.* V.-c. 21. Acton, 1907, *A.L.*; *Hb.Mus.Brit.*

GRAMINEAE

We are greatly indebted to Mr. C. E. Hubbard and Dr. A. Melderis for naming and commenting upon many of the specimens of this very large and critical family in *Herb. Kent.* and *Herb. Lousley*, also for additional information supplied by them. The student of British grasses cannot do better than consult Mr. Hubbard's excellent book *Grasses* (Penguin Books), 1954. We have therefore inserted the page number of that book (prefixed with H.) following the names of the species of which full descriptions, and usually illustrations are included.

PANICUM L.

P. MILIACEUM L. *Millet*. Alien. Warm and warm temperate regions of the earth. This extensively cultivated cereal grass is a common feature of rubbish-tips in all parts of the Area. The f. *RAMIFLORA* Junge was collected in v.-c. 21. Rubbish-tip, Hanwell, 1945, *D.H.K.*; *Hb.K.* det. *C.E.H.*

P. CAPILLARE L. Alien. N. America. V.-c. 21. Crouch End, 1897; Highgate, 1899; *J.E.C.* The var. *OCCIDENTALE* Rydb. is reported from v.-c. 21. Forecourt of Soya Foods Ltd., Springwell, 1945, *N.Y.S.*, *B.W.* & *D.H.K.*; *Hb.K.* det. *C.E.H.*

P. DICHOTOMIFLORUM Michx. Alien. N. America. V.-c. 21. Forecourt of Soya Foods Ltd., Springwell, 1945, *B.W.*; *Hb.K.* det. *Mrs. A. Chase*.

P. LAEVIFOLIUM Hack. Alien. Africa. V.-c. 17. Sandy waste, West End Common, Esher, 1949; *R.A.B.* det. *J.P.M.B.*; *J.E.L.*; *Hb.L.* V.-c. 21. Yiewsley, 1924; *J.E.C.*

ECHINOCHLOA Beauv.

E. CRUS-GALLI (L.) Beauv., *PANICUM CRUS-GALLI* L. *Cockspur*. H., 337. Alien. Warmer regions of the earth. Frequently imported with cage-bird seed, carrot seed, and other seeds, and a common feature of rubbish tips. The var. *LONGISETUM* Döll. is recorded from v.-c. 21. Acton, 1908, *C.B.G.*; *Hb.S.L.B.I.*

E. FRUMENTACEA Link. Alien. S. Europe. V.-c. 18. Dagenham, 1951, N.Y.S.; *Hb.Mus.Brit.* V.-c. 21. Rubbish-tip, Hanwell, 1947, *D.H.K.*; *Hb.K.* det. *C.E.H.*; 1951 & 1955; *J.E.L.*, *D.McC.* & *D.H.K.* Rubbish-tip, Greenford, 1954; *D.H.K.*

DIGITARIA P. C. Fabr.

D. SANGUINALIS (L.) Scop., PANICUM SANGUINALE L. *Crab-grass.* H., 345. Alien. Warm and warm-temperate regions of the earth. V.-c. 16. Bickley, 1936; Chislehurst, 1937; *D.McC.* V.-c. 17. Mizen's greenhouses, Esher, 1941; *A.E.E.* V.-c. 21. Forecourt of Soya Foods Ltd., Springwell, 1946, *D.H.K.*; *Hb.K.* conf. *C.E.H.*

[D. ISCHAEMUM (Schreb.) Muhl., D. HUMIFUSA Pers., PANICUM GLABRUM Gaud. *Smooth Finger-grass, Red Millet.* H., 343. Sandy fields. Very rare. V.-c. 17. Arable land, Pyrford, 1918, *M.Co.*; *Hb.L.* Sandy field near Pyrford, in small quantity, 1948, *B.W.*; *Hb.L.*; 1950; *B.W.* & *J.E.L.* A little outside the Area.]

D. DIDACTYLA Willd. Alien. Mascarene Islands. V.-c. 16. Hextable, introduced with "shoddy", 1948, *D.McC.*; *Hb.L.*

D. ADSCENDENS (Kuath) Henrard, D. MARGINATA Link. H., 345. Alien. Warm and warm-temperate regions of the earth. V.-c. 21. Canal bank near Soya Foods Ltd., Springwell, 1945, *B.W.*; *Hb.K.* det. *C.E.H.*

SETARIA Beauv.

S. ITALICA (L.) Beauv. *Italian Millet.* H., 339. Alien. Warmer regions of the earth. Frequently imported as cage-bird seed and a common plant of rubbish-tips.

S. VIRIDIS (L.) Beauv., PANICUM VIRIDE L. *Green Bristle-grass.* H., 339. Alien. S. Europe, etc. V.-c. 16. Downe, 1936; *P.H.C.* Old pit, Green Street Green, 1938; *D.McC.* Edge of Farningham Wood, diminutive on sandy soil, 1947, *J.E.L.*; *Hb.L.* V.-c. 17. Edge of lane near Leatherhead railway station, 1925, *E.B.B.*; *Hb.L.N.H.S.* Wimbledon Common, 1926; *C.A.*; 1944-45; *B.W.* Garden, Belmont, 1946; *R.P.S.* Wallington, 1944; *A.E.E.* V.-c. 18. Walthamstow, 1900, *R.W.R.*; *Hb.R.* Brook Street, Brentwood, 1908, *P.H.C.*; *Hb.L.N.H.S.* Grays, 1908; *P.H.C.* West Thurrock, 1925; Dagenham Dock, 1927; *J.E.C.* Rubbish-tip, Barking, plentiful, 1951; *J.E.L.* & *J.C.C.* V.-c. 20. Abundant in market gardens, Watford, 1900; *C.S.N.* V.-c. 21. Crouch End, 1897; Hackney Marshes, 1924; Highgate; Muswell Hill; East Finchley; Finchley; Yiewsley; West Drayton; *J.E.C.* Chalkpit, Harefield, 1900, *L.B.H.*; *Hb.L.N.H.S.* Old Park, Southgate, 1904; *L.B.H.* Soya Foods Ltd., Springwell, 1945; rubbish-tip, Hanwell, 1946; Hyde Park, 1950; *D.H.K.* Rubbish-tip, Northolt, 1947; *B.W.* conf. *C.E.H.* Rubbish-tip, Lower Feltham, 1951; *R.W.D.* V.-c. 24. Near Iver, 1915 & 1918; *J.E.C.* The var. WEINMANNI Roem. & Schult. is reported from v.c. 16. Old pit, Green Street Green, 1938; *D.McC.*

S. LUTESCENS (Weigel) C. E. Hubbard, S. GLAUCA auct., PANICUM GLAUCUM auct. *Yellow Bristle-grass.* H., 341. Alien. Warm temperate regions of the earth. V.-c. 16. Crayford, 1910; *J.E.C.* V.-c. 17. Wimbledon Common, 1926; *C.A.* Bed of pond, Nutfield Marsh, 1929, *E.C.W.*; allotments by Walton-on-Thames railway station, 1932, *J.E.L.*; *Hb.L.* V.-c. 18. Rubbish-tip, East Ham, 1951, *J.E.L.* & *J.C.C.*; *Hb.L.* V.-c. 21. Highgate, 1896; Crouch End; Muswell Hill; East Finchley; Finchley; Hackney Marshes; Yiewsley; *J.E.C.* Soya Foods Ltd., Springwell, 1945, *B.W.*; *Hb.K.* conf. *C.E.H.* Rubbish-tip, Lower Feltham, 1951; *R.W.D.* Rubbish-tip, Hanwell, 1955; *P.M.N.** det. *D.H.K.*

S. VERTICILLATA (L.) Beauv., PANICUM VERTICILLATM L. *Rough Bristle-grass.* H., 339. Alien. Warmer regions of the earth. V.-c. 21. Rubbish-tip, Northolt, 1947, *B.W.*; *Hb.K.*; 1948; *D.H.K.* Bombed site, King William Street, E.C., 1950, *J.E.L.*; *Hb.L.*

*Newey, P. M.

SPARTINA Schreb.

S. TOWNSENDII H. & J. Groves. *Cord Grass*. H., 331. Mud flats by the tidal estuary. Rare. V.-c. 18. Stone Ness, West Thurrock, 1949, *J.E.L.* & *B.W.*; *Hb.L.*

ZEA L.

Z. MAYS L. *Maize*. Alien. N. America. V.-c. 16. Rubbish-tip, Sevenoaks, 1951; *D.McC.* V.-c. 18. Rubbish-tip, Barking, 1953; *B.T.W.* V.-c. 21. Rubbish-tip, Hanwell, 1954; Rubbish-tip, Greenford, 1955; *D.H.K.*

BECKMANNIA Host.

B. SYZIGACHNE (Steud.) Fernald. Alien. N. America. V.-c. 24. Uxbridge, 1911. *J.E.C.*; *Hb.Mus.Brit.* det. *A.M.*

ELEUSINE Gaertn.

E. INDICA (L.) Gaertn. Alien. Tropics. V.-c. 16. Chicken run, Bromley, 1952, *T.R.E.*; *Hb.L.*

DACTYLOCTENIUM Beauv.

D. RADULANS (R. Br.) Beauv. Alien. Australia, etc. V.-c. 16. Hextable, 1948, introduced with "shoddy"; *D.McC.*; *Hb.L.*

SORGHUM Moench

S. SACCHARATUM Moench. Alien. Tropics. V.-c. 18. Dagenham Dock, 1927, *J.E.C.*; *Hb.Mus.Brit.* V.-c. 21. Yiewsley, 1926; *J.E.C.*; *Hb.Mus.Brit.*

S. HALEPENSE (L.) Pers. Alien. Tropics. V.-c. 18. Rubbish-tip, Dagenham, 1934; near Ford Works, Dagenham, 1936, *J.E.L.*; *Hb.L.* both det. *C.E.H.* V.-c. 21. Rubbish-tip, Northolt, 1947, *B.W.*; *Hb.K.* det. *C.E.H.*

S. CAFFRORUM (Retz.) Beauv. Alien. Tropics. V.-c. 21. Rubbish-tip, Hanwell, 1955, *D.McC.*; *Hb.L.* det. *C.E.H.*

S. CERNUUM (Ard.) Host. Alien. Tropics. V.-c. 18. Waste ground, Dagenham, 1933, *R.M.*; *Hb.L.* det. *C.E.H.*

[LEERSIA Sw.

L. ORYZOIDES (L.) Sw., ORYZA ORYZOIDES (L.) Brand. *Cut-grass*. H., 321. By streams and canals. Very rare. V.-c. 17. By canal, Byfleet, 1952, *J.E.L.*; *Hb.L.* In old barge on canal near Byfleet, just outside the Area, 1943; *I.G.P.*; with fully exserted panicles, 1947; *J.E.L.*; *Hb.L.*; no exserted panicles after hot summer, 1949; *J.E.L.*]

PHALARIS L.

P. MINOR Retz. H., 247. Alien. Mediterranean region and W. Asia. V.-c. 18. Rubbish-tip, Barking, 1953; *J.E.L.* & *B.W.* V.-c. 21. Hackney Marshes, 1912, 1918, 1921, 1925 & 1927; Yiewsley, 1924; *J.E.C.*

P. AQUATICA L. Alien. Mediterranean region. V.-c. 21. Hackney Marshes, 1912, *J.E.C.*; *Hb.Mus.Brit.* det. *A.M.*

P. CANARIENSIS L. *Canary Grass*. H., 247. Alien. N. Africa. Imported for canary seed and a characteristic feature of almost all the metropolitan rubbish-tips.

P. PARADOXA L. H., 247. Alien. Mediterranean region. V.-c. 16. Green Street Green, 1938; *D.McC.* V.-c. 17. Mortlake, 1916; *J.E.C.* V.-c. 18. Allotments, Leytonstone, 1931, *G.L.*; *Hb.Mus.Brit.* V.-c. 21. East Finchley, 1907; Yiewsley, 1908, 1912, 1927; Hackney Marshes, 1921, 1926 & 1927, *J.E.C.*; *Hb.Mus.Brit.* all det.

A.M. Uxbridge, 1908, *C.B.G.*; *Hb.S.L.B.I.* Rubbish-tip, Hanwell, a large patch, 1954; *L.M.P.S.* det. A.M. The var. *PRAEMORSA* (Lam.) Coss. & Dur. is reported from v.-c. 17. Mortlake, 1916, *J.E.C.*; *Hb.Mus.Brit.* V.-c. 21. Finchley, 1908, Yiewsley, 1924; Hackney Marshes, 1924, *J.E.C.*; *Herb. Mus. Brit.*, all det. A.M. Bombed site near Holborn, 1950, *J.W. & E.B.Ba.*; *Hb. Mus.Brit.* det. N.L.B.*

P. *ANGUSTA* Nees. Alien. N. America. V.-c. 21. Hackney Marshes, 1913; *J.E.C.*

P. *ARUNDINACEA* L. *Reed-grass*. H., 249. By rivers, streams, ponds, etc., and in marshes and wet places. Common in all the v.-cc.

ANTHOXANTHUM L.

A. *ODORATUM* L. *Sweet Vernal Grass*. H., 245. Meadows, heaths, commons, marshes and woods. A variable species worthy of further study. Common in all the v.-cc.

A. *PUELI* Lecoq & Lamotte, A. *ARISTATUM* auct. H., 245. Possibly native in sandy fields; an introduction elsewhere. Rare. V.-c. 17. Sandy arable field, Old Byfleet, 1937, *J.E.L.*; *Hb.L.* V.-c. 18. Dagenham Dock, 1927; *J.E.C.* Waste ground near Dagenham, 1927, *R.M.*; *Hb.L.* V.-c. 21. Hackney Marshes, 1909, 1913, 1924 & 1927; Yiewsley, 1913; *J.E.C.* V.-c. 24. Uxbridge, 1912; *J.E.C.*

ALOPECURUS L.

A. *PRATENSIS* L. *Meadow Foxtail*. H., 309. Meadows and grassy places. Abundant throughout the Area. Proliferous forms are reported from v.-c. 21. Highgate, 1895; Finchley, 1909 & 1927; Mill Hill, 1919; Muswell Hill, 1907; *J.E.C.*

A. *MYOSUROIDES* Huds., A. *AGRESTIS* L. *Slender Foxtail*, *Black Twitch*. H., 301. Arable fields, roadsides, bombed sites and waste places. Common in all the v.-cc.

A. *GENICULATUS* L. *Marsh Foxtail*. H., 307. Marshes, wet meadows, and pond verges. Common throughout the Area.

×*PRATENSIS* = A. × *HYBRIDUS* Wimm. H.307. V.-c. 18. Waste ground, Loughton, with both parents, 1954; *R.M.P.* V.-c. 21. Marshy field by canal near Harefield, 1938; *A.H.G.A. & N.Y.S.*

A. *AEQUALIS* Sobol., A. *FULVUS* Sm. *Orange Foxtail*. H., 303. In similar situations to the preceding species. Locally plentiful. V.-c. 16. Hayes Common, 1921, *W.W.*; *Hb.L.N.H.S.* V.-c. 17. Mitcham Common; Richmond Park, 1948; *R.A.B.* V.-c. 18. Epping Forest, bog near "The Rising Sun", Walthamstow, 1902, *R.W.R.*; *Hb.R.* Golding's Hill Pond, Loughton, 1900, *C.S.N.*; *Hb.L.N.H.S.* V.-c. 20. Aldenham Reservoir, 1929, *J.E.L.*; *Hb.L.* V.-c. 21. Ruislip Reservoir, 1914, *L.J.T.*; *Hb.B.* det. *C.E.S.*; 1921; *E.B.B.*; *Hb.L.N.H.S.*; 1939-55; Shortwood Common, Staines, 1946; Brent Reservoir, Hendon, 1940; *D.H.K.*; 1949, *J.E.L.*; *Hb.L.* Home Park, Hampton Court, 1943; *B.W.* Hounslow Heath, 1945; *B.W. & D.H.K.* conf. *C.E.H.*; 1955; *D.H.K.*

*Bor, N. L.

MILIUM L.

M. EFFUSUM L. *Wood Millet*. H., 251. Damp shady woods. Locally abundant. V.-c. 16. Crofton; Longlands; Sidcup; W.W. Joyden's Wood, Bexley, 1917; near Southfleet, 1919; Farnborough, 1938; E. of Shoreham; N. of Cudham Grange; *P.H.C.* V.-c. 17. Oxted, local, 1923; near Coulsdon, plentiful, 1934; *R.W.R.* Between Claygate and Ewell, 1927; near Kingswood railway station, 1930, *J.E.L.*; *Hb.L.* Cobham, 1938; *P.H.C.* Near Titsey, 1914; *L.J.T.* Chipstead Valley, 1955; *J.E.L.* V.-c. 18. Frequent. V.-c. 19. Epping Lower Forest, 1951; *R.M.P.* V.-c. 20. Wormley; *L.B.H.* Essendon, 1920; Broxbourne; *P.H.C.* Bayford Wood; Wormley Wood, 1954; Ball's Wood; Derry's Wood, 1953; *R.M.P.* V.-c. 21. Bishop's Wood, Hampstead, 1902, *C.S.N.*; *Hb.L.N.H.S.*; 1950; *D.H.K.* Highgate Woods, 1904; *C.S.N.* Garrett Wood, Springwell, abundant; Harefield; Pinner Wood; Ruislip Woods; Scratch Wood; Perivale Wood; Long Wood, Wyke Green, abundant; Osterley Park, 1932-55; *D.H.K.* V.-c. 24. Denham, 1935; *P.H.C.*; 1955; *D.H.K.*

PHLEUM L.

P. PRATENSE L. *Timothy, Cat's-tail*. H., 297. Meadows, grassy places and waste ground. Common in all the v.-cc. but often sown, or introduced, with grass mixtures.

P. NODOSUM L. *Smaller Cat's-tail*. H., 295. Meadows, downs, grassy places, etc. Common throughout the Area. The var. *BERTOLONII* (DC.) Beck. is reported from v.-c. 17. Smallholding, Carshalton, 1937, *G.W.B.**; *Hb.L.* det. *C.E.H.*

P. SUBULATUM (Savi) Aschers. & Graebn. H., 291. Alien. Mediterranean region. V.-c. 18. Rubbish-tip, Barking, 1951, *J.E.L.*, *B.W.* & *J.Ru.*; *Hb.L.* det. *A.M.*

AGROSTIS L.

A. STOLONIFERA L., *A. ALBA* auct., *A. PALUSTRIS* Huds. *Creeping Bent, Fiorin*. H., 279. Grassy places, salt marshes, downs, roadsides, open woods, waste and cultivated ground. Very common in all the v.-cc. The var. *PALUSTRIS* (Huds.) Farw. is frequent in wet places. Hybrids with *A. TENUIS* are probably frequent.

A. GIGANTEA Roth, *A. NIGRA* With. *Black Bent, Red Top*. H., 277. Roadsides, waste ground, bombed sites, rubbish-tips and grassy places. Probably common but much confused with *A. TENUIS* and distribution not worked out. V.-c. 16. Orchard N. of Farningham Wood; rubbish-tip, East Wickham, Plumstead, 1955; *J.F.H.* & *P.C.H.* V.-c. 17. Near Farleigh, 1928, *J.E.L.*; near Richmond, 1931, *J.Fr.*; *Hb.L.* both det. *W.R.P.* Bookham Common; *A.W.J.* V.-c. 21. Common on City bombed sites, 1944; *J.E.L.* The var. *RAMOSA* (S. F. Gray) Philipson is recorded from v.-c. 17. Dried-up bed of Fetcham Millpond, 1944, *J.E.L.*; *Hb.L.* det. *C.E.H.* V.-c. 21. Meadows by canal, Hanwell; Syon Park, 1947, *D.H.K.*; *Hb.K.* det. *C.E.H.* The var. *DISPAR*

*Bettles, G. W.

(Michx.) Philipson is probably the common form of waste ground, roadsides and rubbish-tips and is recorded from v.-c. 21. Hyde Park, 1945, *B.W.*; *Hb.K.* det. *C.E.H.* Bombed sites Stepney, Limehouse and Isle of Dogs, 1945-55; Parsons Green; Kensington Gardens; rubbish-tip, Hanwell, 1955; *D.H.K.*

A. TENUIS Sibth., *A. VULGARIS* With. *Common Bent, Brown Top.* H., 275. Heaths, commons and grassy places on poor soils. Abundant throughout the Area. The var. *ARISTATA* Holmb. is reported from v.-c. 16. Bostall Heath, 1926, *St. J.M.*; *Hb.L.* det. *W.R.P.*

A. CANINA L. *Brown Bent.* H., 273. Heaths, commons and grassy places on acid soils. Locally abundant. V.-c. 16. Chislehurst Common; *W.W.*; 1954; *G.M.B.* Keston Common; *A.W.J.* V.-c. 17. Arbrook Common; *W.W.* Walton Downs, 1927, *J.E.L.*; Wimbledon Common; Bookham Common; *A.W.J.* V.-c. 18. Snaresbrook; *R.W.R.* & *E.L.R.* Near Theydon, 1904, *L.B.H.*; *Hb.H.* Epping Forest; *J.H.G.P.* Curtis Mill Green, 1954; *B.T.W.* V.-c. 19. Galleyhill Wood, 1954; *R.M.P.* V.-c. 20. North Mimms; *E.M.D.* Essendon, 1920; *P.H.C.* V.-c. 21. Highgate Woods; *L.B.H.* Stanmore Common; Bushy and Hampton Court Home Parks; Hampstead Heath; Scratch Wood; Hendon; Ealing Common; Hadley Common; Ken Wood; Finchley Common, 1944-55; *D.H.K.* The var. *ARIDA* Schlecht. is recorded from v.-c. 18. Hart's Wood, Brentwood, 1953, *R.M.P.*; *Hb.Mus.Brit.* det. *A.M.* V.-c. 21. Ruislip; *W.R.P.* Ealing; Hounslow Heath; *D.H.K.* det. *C.E.H.*

A. HYEMALIS (Walt.) B.S.P., *A. SCABRA* Willd. Alien. N. America. V.-c. 21. Finchley, 1910; Hackney Marshes, 1912; Yiewsley, 1913; *J.E.C.*

A. SEMIVERTICILLATA (Forsk.) C. Christ., *A. VERTICILLATA* Vill. *Water Bent, Beardless Beard-grass.* H., 281. Alien. Mediterranean region. V.-c. 21. Near Uxbridge, 1919, *W.R.S.* & *L.B.H.*; *Hb.S.L.B.I.*

POLYPOGON Desf.

P. MONSPELIENSIS (L.) Desf. *Annual Beard-grass.* H., 285. Alien. Europe, including parts of Britain. V.-c. 21. By canal, West Drayton, 1905, *L.B.H.*; *Hb.H.* Hackney Marshes, 1921; Yiewsley, 1927, *J.E.C.*; *Hb.Mus.Brit.* both det. *A.M.*

P. PANICEUS (L.) Lag., *P. MARITIMUS* Willd. Alien. Europe. V.-c. 18. Near Leyton, 1927; *J.E.C.*

CALAMAGROSTIS Adans.

C. EPIGEJOS (L.) Roth. *Wood Small-reed, Bush Grass.* H., 259. Damp woods, thickets and ditches with a marked preference for heavy soils. Local. V.-c. 16. Hayes Common, 1938 & 1946; *D.McC.*; 1948; *J.B.M.* V.-c. 17. Gravel pits, Ham, a small clump, 1945; now a patch 9 yards across; Sheerwater Bog, Byfleet, 1949; Richmond Park, 1952; *B.W.* Mitcham Common, 1932, *J.E.L.*; *Hb.L.*; 1948; *R.A.B.* V.-c. 18. Brentwood Common, 1902; Lark's Wood, Chingford, 1910; *R.W.R.* Monks Wood, Loughton, 1951-55; *R.M.P.* V.-c. 20. Ball's Wood, 1953; *R.M.P.* V.-c. 21. Northwood, 1908, *C.B.G.*; *Hb.S.L.B.I.* Bombed site near St. Paul's Cathedral, 1948, *J.E.L.*; *Hb.L.*

GASTRIDIDIUM Beauv.

G. VENTRICOSUM (Gouan) Schinz & Thell. *Nit Grass*. H., 287. Arable land. Very rare. V.-c. 20. Arable field on heavy soil near Cowheath Wood, Bayford, 1946, *S.P.**; *Hb.L.*

APERA Adans.

A. SPICA-VENTI (L.) Beauv. *Loose Silky-bent*. H., 265. Cultivated and waste ground on light soils. Locally abundant, though sometimes only casual. V.-c. 16. Green Street Green; *J.P.M.B.* V.-c. 17. West Molesey, 1905, *C.S.N.*; *Hb.L.N.H.S.* Cornfield near Thorpe; banks of river Wey between Weybridge and New Haw, 1917, *E.B.B.*; *Hb.B.* Near Fairmill; *W.W.* Cornfield near Fetcham, 1918; *E.B.B.* Field near Walton-on-the-Hill, 1933; *R.W.R.* Wimbledon Common, 1934; *C.A.* Epsom College, 1939; Mizen's Market Garden, Ewell, 1939; Buckland, 1939, *A.E.E.*; *Hb.E.C.M.* Sandy fields, West Molesey, abundant, 1943, *J.E.L.*; *Hb.L.* Near Ham, 1931, *J.E.L.*; *Hb.L.* Walton Common, 1953; *R.A.B.* Bookham Common; *A.W.J.* V.-c. 18. Field at High Beach, abundant, 1906; near Hale End; *R.W.R.* Dagenham Dock, 1927; *J.E.C.* V.-c. 20. Rickmansworth, 1908; *P.H.C.* Wormley; *L.B.H.* Broxbourne, 1899, *F.E.M.*; *Hb.L.N.H.S.* V.-c. 21. Hornsey, 1888; Muswell Hill, 1906; East Finchley, 1910; Finchley, 1921; Hackney Marshes, 1924; Dawley, 1920; Shepperton, 1921; Yiewsley, 1922; Hayes, 1916; *J.E.C.* Southall, 1900; *L.B.H.* Harmondsworth, abundant; *B.W.* & *D.H.K.* West Drayton; Colnbrook; Stanwell; Staines; Laleham; Hounslow; Hanwell; Horsendon Hill; Primrose Hill, 1944-55; *D.H.K.* Ealing; *F.P.D.B.* Eaton Square, S.W.1; *D.McC.* Hampstead Heath, 1955; *B.W.* V.-c. 24. Near Iver, 1910-27; *J.E.C.* Cornfields near Black Park, 1950; *L.N.H.S. Excursion.*

[AMMOPHILA Host

A. ARENARIA (L.) Link, *PSAMMA ARENARIA* (L.) Roem. & Schult. *Marram Grass*. H., 263. Alien. Europe, including the coasts of Britain. V.-c. 21. Planted on the bunkers of Northwood Golf Links, 1913, *L.J.T.*; *Hb.L.N.H.S.*]

AIRA L.

A. CARYOPHYLLEA L. *Silvery Hair-grass*. H., 233. Heaths, commons and dry grassy places on light soils. Uncommon. V.-c. 16. Keston Common; *W.W.* V.-c. 17. Near Weybridge, 1917; *E.B.B.* Box Hill, 1925; *R.W.R.* Walton Heath; *W.W.* Esher Common, 1936; Worm's Heath, 1936; *P.H.C.* Limpsfield, very local, 1921. *R.W.R.*; *Hb.* *R.* Bookham Common; *A.W.J.* V.-c. 18. Ongar Park Wood, on heathy ground, 1909; *R.W.R.* Purfleet, 1935; *P.H.C.* Loughton Cemetery, 1955; *R.M.P.* V.-c. 20. Near Essendon, 1920; *P.H.C.* V.-c. 21. Hackney Marshes, 1913; North Finchley, 1925; *J.E.C.* Stanwell Moor, 1908, *C.B.G.*; *Hb.S.L.B.I.* Near Pinner, 1919; *E.B.B.* Oakleigh Park, 1914; *R.W.R.* Home Park, Hampton Court, 1946, *B.W.*; railway track between Uxbridge and Denham, 1951; Mimmshall Wood, 1948, *D.H.K.*;

*Phelp, S.

Hb.K. Bombed site, Upper Thames Street, 1945; *J.E.L.* V.-c. 24. Denham, 1935; *P.H.C.*

A. PRAECOX L. *Early Hair-grass.* H., 235. Heaths, commons, open woods, dry fields and railway tracks on light soils. Common in all the v.cc.

DESCHAMPSIA Beauv.

D. CESPITOSA (L.) Beauv. *Tufted Hair-grass.* H., 227. Damp meadows, marshes and woods on heavy badly-drained soils. Common throughout the Area. The var. *PARVIFLORA* (Thuill.) C. E. Hubbard, a woodland form, is reported from v.-c. 21. Turner's Wood, Finchley, 1945; *R.S.R.F.* det. *C.E.H.*

D. FLEXUOSA (L.) Trin., *AIRA FLEXUOSA* L. *Wavy Hair-grass.* H., 225. Acid heaths, moors and open woods. Locally abundant. V.-c. 16 & 17. Common. V.-c. 18. Thorndon Park; Woodredon Hill; *R.W.R.* High Beach, 1910, *E.M.D.*; *Hb.L.N.H.S.* Cooks Folly Wood; *R.W.R.* & *E.L.R.* V.-c. 19. Latton, 1951; *R.M.P.* V.-c. 21. Highgate Woods, 1887; *J.E.C.* Harrow Weald Common, 1902, *C.S.N.* & *L.B.H.*; abundant, 1933-55; Ruislip; Northwood; Pinner Wood; Staines Moor; Hounslow Heath; Horsendon Hill, 1944-55; *D.H.K.* Ken Wood; *R.S.R.F.*; 1955; *D.H.K.* Syon Park; *B.W.* & *D.H.K.* Osterley Park; *C.E.H.* Winchmore Hill Wood; Hampstead Heath; *L.B.H.*; 1955; *D.H.K.*

HOLCUS L.

H. MOLLIS L. *Creeping Soft-grass.* H., 239. Open woods, often carpeting the ground, heaths, etc., preferring light or acid soils. Locally abundant. V.-c. 16. Bromley; *P.H.C.* Darrack Wood, Orpington, 1921; *E.B.B.* V.-c. 17. Richmond Park; Banks Common; *E.B.B.* Near Weybridge, 1922; *W.W.* Barnes Common; Limpsfield; *R.W.R.* Mitcham, 1937; Oxted, 1938; *P.H.C.* Ham Common, 1944, *J.E.L.*; *Hb. L.* Wimbledon Common, 1955; *J.E.S.* V.-c. 18. Cooks Folly Wood; *R.W.R.* & *E.L.R.* High Beach; Kelvedon Hatch, *P.H.C.*; *Hb.L.N.H.S.* Chigwell; *R.W.R.* Cuckoo Pits, Epping Forest, 1944; *J.H.G.P.* Ongar Park Wood, 1952; *J.E.L.* & *B.T.W.* Curtis Mill Green, 1954; *B.T.W.* V.-c. 19. Epping Lower Forest, abundant, 1951; *L.N.H.S. Excursion.* V.-c. 20. Watford; Wormley; *L.B.H.* Aldenham; *C.S.N.* Broxbourne, *E.M.D.*; *Hb.L.N.H.S.* Essendon, 1920; *P.H.C.* V.-c. 21. Frequent in the north-west parts of the county. Hounslow Heath, frequent; *D.H.K.* Bombed sites, St. Olaves, Hart Street & Billiter Square, E.C., 1945; *J.E.L.* V.-c. 24. Langley; *L.B.H.*

H. LANATUS L. *Yorkshire Fog.* H., 237. Meadows, pastures, woods, marshes, waste ground, etc. Very common in all the v.cc.

TRisetum Pers.

T. FLAVESCENS (L.) Beauv., *AVENA FLAVESCENS* L. *Yellow Oat.* H., 221. Meadows and dry grassy places with a preference for cal-

careous soils. Common throughout the Area. The var. *VARIEGATUM* Mert. & Koch is reported from v.-c. 17. Banstead Downs, 1927, *E.C.W.*; Epsom Downs, 1927, *J.E.L.*; *Hb.L.* det. *W.O.H.**

T. PANICEUM Pers. Alien. Europe. V.-c. 21. Hackney Marshes, 1913; *J.E.C.*

AVENA L.

A. FATUA L. *Common Wild Oat*. H., 213. Cultivated and waste ground. Sporadic in all the v.-cc. The following varieties have been recorded:—var. *PILOSISSIMA* S. F. Gray. V.-c. 21. Rubbish-tip, Hanwell, 1946, *D.H.K.*; *Hb.K.* Bombed site, Upper Thames Street, E.C., 1949; *B.W.* & *D.H.K.* Both det. *C.E.H.* Var. *PILOSA* Syme. V.-c. 16. Green Street Green, near Farnborough, 1930, *J.E.L.*; *Hb.L.* V.-c. 21. Bombed site, Holborn, 1948; *C.E.H.* Southall; Hounslow Heath; near Tottenham, 1947; *D.H.K.*; *Hb.K.* Var. *GLABRATA* Peterm. V.-c. 21. Finchley, 1929, *J.E.L.*; *Hb.L.* det. *W.O.H.* Between Stamford Hill and Tottenham, 1947, *D.H.K.*; *Hb.K.* det. *C.E.H.* Between Staines and Stanwell Moor, 1908, *C.B.G.*; *Hb.S.L.B.I.*

× *SATIVA*. V.-c. 21. Canal bank, Hanwell, 1925, *C.E.H.*; *Hb.Kew.*

A. LUDOVICIANA Durieu. *Winter Wild Oat*. H., 215. Cultivated and waste ground on heavy soils. Possibly common but confused with the previous species. V.-c. 21. Rubbish-tip, Hanwell, 1946, *D.H.K.*; *Hb.K.* conf. *C.E.H.* Rubbish-tip, Greenford, 1954; *B.W.* det. *A.M.*

A. BYZANTINA C. Koch. *Algerian Oat*. Alien. Mediterranean region. V.-c. 21. Rubbish-tip, Hanwell, 1949; East Heath, Hampstead, 1949, *D.H.K.*; *Hb.K.* det. *C.E.H.*

A. STRIGOSA Schreb. *Bristle or Small Oat*. H., 211. Waste ground. Rare. Var. *GLABRESCENS* (Marquand) Druce. V.-c. 21. Bombed site, Great Tower Street, E.C., 1946; *J.P.M.B.* & *J.E.L.*

A. ORIENTALIS Schreb., *A. SATIVA* var. *CONTRACTA* Neill. Alien. Western Asia. V.-c. 21. Rubbish-tip, Greenford, Hanwell and Hounslow Heath, 1950; *D.H.K.*

A. SATIVA L. *Cultivated Oat*. H., 211. Common on tips and waste ground in all the v.-cc.

HELICTOTRICHON Bess.

H. PUBESCENS (Huds.) Pilger, *AVENA PUBESCENS* Huds. *Hairy Out-grass*. H., 205. Downs and grassy places, especially on the chalk and near the Thames. Local. V.-c. 16. Greenhithe, 1945, *J.E.L.*; *Hb.L.* V.-c. 17. Near Weybridge, 1922; *W.W.* Above Oxted Chalkpit; *R.W.R.* Nore Hill, Chelsham, 1938, *D.McC.*; *Hb.L.N.H.S.* Roadside between Headley and Walton, 1927, *J.E.L.*; Woodcote Park, 1929, *E.C.W.*; *Hb.L.* V.-c. 20. Essendon, 1953; *R.M.P.* V.-c. 21. Springwell; Harefield; Drayton Ford; between Hampton Court and Kingston Bridge, 1939-55; *D.H.K.* Meadows in Syon House grounds; *B.W.* & *D.H.K.*

*Howarth, W. O.

H. PRATENSE (L.) Pilger, *AVENA PRATENSIS* L. *Meadow Oat-grass*. H., 207. Very local. V.-c. 16. E. of Eynsford; Downe; W.W. V.-c. 17. Epsom, Banstead and Farthing Downs; W.W. Walton Downs, 1927, *J.E.L.*; *Hb.L.* V.-c. 21. Very rare. Home Park, Hampton Court, 1943, *B.W.*; *Hb.K.*; 1953; *D.H.K.*

ARRHENATHERUM Beauv.

A. ELATIUS (L.) Beauv. ex J. & C. Presl, *A. AVENACEUM* Beauv. *False Oat-grass*. H., 209. Rough grassy places, woods, roadsides and waste ground. Abundant throughout the Area.

CYNODON Rich.

C. DACTYLON (L.) Pers., *CAPRIOLA DACTYLON* (L.) Kuntze. *Bermuda Grass*. H., 335. Alien. Warmer temperate regions of the earth. Established in grassy places. Rare. V.-c. 16. Abbey Wood, 1954; *G.M.B.* conf. *D.H.K.* V.-c. 17. Wallington, 1934, *A.L.S.*; Kingswood, 1949, *E.M.C.I.*; *Hb.L.* Barnes Common, 1948; *M.M.W.*; 1955; *B.W.* Reigate Heath, 1954; *B.M.C.M.* Kew Gardens in several places; *C.E.H.* V.-c. 18. Albert Docks, a large well established patch, 1934, *P.H.C.*; *Hb.L.N.H.S.*

SIEGLINGIA Bernh.

S. DECUMBENS (L.) Bernh., *TRIODIA DECUMBENS* (L.) Beauv. *Heath or Moor Grass*. H., 327. Moors, heaths and commons. Locally abundant. V.-c. 16. Chislehurst Common; Hayes Common; W.W. Near Westerham; *R.W.R.* V.-c. 17. Oxshott Heath; Coulsdon Common; *P.H.C.* Richmond Park; *L.J.T.* Wimbledon Common; W.W. Walton Heath; *E.B.B.* Limpsfield; *R.W.R.* Bookham Common; *C.P.C.* & *E.B.Ba.* V.-c. 18. Near Theydon, 1900, *L.B.H.*; *Hb.L.N.H.S.* Walthamstow; *E.M.D.* Snaresbrook; Cooks Folly Wood; *R.W.R.* & *E.L.R.* Near Loughton Camp; *E.B.B.* V.-c. 19. Epping Lower Forest, 1951; *L.N.H.S. Excursion*. V.-c. 21. Stanmore Common; *C.S.N.* Poors Field, Ruislip, 1919; *E.B.B.*; 1955; Harrow Weald Common; Bushy Park; Staines Moor; Hounslow Heath; near Scratch Wood, Edgwarebury; 1934-55; *D.H.K.* East Heath, Hampstead, 1905; *L.B.H.*; 1955; *D.H.K.* N. of Harefield; *B.W.*

PHRAGMITES Adans.

P. COMMUNIS Trin., *ARUNDO PHRAGMITES* L. *Common Reed*. H., 323. Swamps, lakes, river walls, dykes, etc. Very common in all the v.-cc.

CYNOSURUS L.

C. ECHINATUS L. *Rough Dog's-tail*. H., 193. Alien. S. Europe. V.-c. 16. Hayes, 1937; *D.McC.* Dartford, 1930; *P.H.C.* V.-c. 17. Mortlake, abundant on waste ground, 1915; *C.E.B.*; 1917-20; *J.E.C.* Near Weybridge, 1922; W.W. Limpsfield, 1917, *R.W.R.*; *Hb.B.* Burgh Heath, 1924; *C.H.G.** Between Chipstead and Tadworth, 1931; *P.H.C.* West Streatham, 1924, *D.G.C.*; gravel pit, Worm's Heath, 1927; Tamworth Lane, Mitcham Common, 1930, *J.E.L.*; *Hb.L.* Putney Heath, 1933;

*Grinling, C. H.

C.A. Langley Bottom, Epsom, 1936; near Kingswood railway station, 1938, *A.E.E.*; *Hb.E.C.M.* Wimbledon Common, 1955, *J.E.C.* V.-c. 18. Rainham, 1927; Purfleet, 1935; *P.H.C.* V.-c. 20. St. Albans, 1922; *J.E.C.* Crews Hill, *L.B.H.* V.-c. 21. Fortis Green, 1910; East Finchley, 1910; Harefield, 1911; Finchley, 1922; Hackney Marshes, 1925; Yiewsley, 1927; Church End, 1926; Hendon, 1927; near West Drayton, 1918; Greenford, 1917; Wembley, 1924; North Finchley, 1925; *J.E.C.* Hayes, 1923; *L.J.T.* Canal near Harefield, 1930; *P.H.C.* Bombed site, Bread Street, E.C., 1949; *I.A.W.*; 1951; *I.A.W.* & *J.E.L.*; 1953; *A.W.J.*

C. CRISTATUS L. *Crested Dog's-tail*. H., 195. Meadows and grassy places. Very common throughout the Area.

KOELERIA Pers.

K. GRACILIS Pers., K. CRISTATA auct. *Crested Hair-grass*. H., 217. Dry grassy places with a preference for calcareous soils. Locally plentiful. V.-c. 16. Downe; *W.W.* V.-c. 17. Mickleham Downs, 1919, *E.B.B.*; *Hb.B.* Riddlesdown, 1928; Warlingham, 1936; *R.W.R.* Nore Hill, 1938; *D.McC.* Banstead Downs; Park Downs, Chipstead, 1931; Mitcham Common, 1929, *J.E.L.*; Woodcote Park, 1929, *E.C.W.*; *Hb.L.* Box Hill; Bookham Common; *A.W.J.* V.-c. 21. Home Park, Hampton Court, 1912; *J.E.C.*; 1943; *B.W.*; 1955; *D.H.K.* Uxbridge Common; Horsendon Hill, 1944-50; *D.H.K.* Syon House grounds; *B.W.* & *D.H.K.*

K. PHLEOIDES Pers. Alien. Europe. V.-c. 21. Yiewsley, 1914, *J.E.C.*; *Hb.Mus. Brit.* det. *A.M.*

DIPLACHNE Beauv.

D. FUSCA (L.) Beauv. ex Roem. & Schult. Alien. Australia. V.-c. 16. Hextable introduced with "shoddy", 1948, *D.McC.*; *Hb.L.*

MOLINIA Schrank

M. CAERULEA (L.) Moench. *Purple Moor-grass*. H., 325. Damp or wet places on heaths and commons. Locally abundant, but very variable species. V.-cc. 16 & 17. Common. V.-c. 18. Epping Forest, *C.S.N.*; *Hb.L.N.H.S.* Snaresbrook Heath; Cooks Folly Wood; *R.W.R.* & *E.L.R.* Theydon; Hainault Forest; *P.H.C.* High Beach; *L.J.T.* V.-c. 19. Roydon; *L.J.T.* Epping Lower Forest, 1951; *L.N.H.S.* *Excursion*. V.-c. 20. Bricket Wood, plentiful; *R.W.R.* Berry Grove, near Aldenham; *C.S.N.* Hertford Heath, 1953; *R.M.P.* Moor Park; *J.G.D.* V.-c. 21. Stanmore Common, 1912; *C.S.N.*; 1955; *D.H.K.* Hampstead Heath, 1903; *L.B.H.*; 1955; *D.H.K.* Harefield; Harrow Weald Common; Hounslow Heath, abundant, 1939-55; *D.H.K.* V.-c. 24. Black Park, 1931; *J.C.R.*; 1944-55; *D.H.K.*

CATABROSA Beauv.

C. AQUATICA (L.) Beauv. *Water Whorl-grass*. H., 197. Muddy margins of ponds, shallow streams and ditches. Rare, and decreasing. V.-c. 17. Weybridge, 1904, *L.B.H.*; *Hb.H.* Near Watermeads, Mitcham, 1930, *J.E.L.*; *Hb.L.* Richmond Park, ponds near Ham Gate, 1934, *R.W.R.*; *Hb.R.*; 1939; *C.A.* 1950; *B.W.* V.-c. 20. Near Springwell,

1945; *D.H.K.* V.-c. 21. Finchley Common, 1917; Ponders End, 1920; Cowley, 1927; *J.E.C.* West Bedfont, 1945; *B.W.*, *F.R.* & *D.H.K.* Above Denham Lock, *C.B.G.*; *Hb.S.L.B.I.* Harefield; *B.W.* Uxbridge Moor; Drayton Ford; Stanwell Moor; Poyle; Yeoveney; Staines, 1944-50; *D.H.K.* V.-c. 24. Colnbrook, 1910; *P.H.C.*; *Hb.L.N.H.S.*

ERAGROSTIS Beauv.

E. CILIANENSIS (All.) Link ex Vig-Lut., *E. MAJOR* Host. Alien. Europe V.-c. 18. Rubbish-tip, East Ham, 1951, *J.C.C.*; *Hb.L.* det. *J.E.L.*

E. PILOSA (L.) Beauv. Alien. Tropics. V.-c. 18. Waste ground, Grays, 1927, *R.M.*; *Hb.Mus.Brit.*

MELICA L.

M. UNIFLORA Retz. *Wood Melick.* H., 201. Woods and shady banks. Common in all the v.-cc.

DACTYLIS L.

D. GLOMERATA L. *Cock's-foot.* H., 191. Pastures, grassy places, waste ground and roadsides. Very common in all the v.-cc. The var. *CONGESTA* Gren. & Godr. is recorded from v.c. 17. Box Hill, 1924, *J.E.L.*; *Hb.L.* Proliferous and viviparous forms are occasionally met with.

CATAPODIUM Link

C. MARINUM (L.) C. E. Hubbard, *C. LOLIACEUM* (Huds.) Link, *DEMAZERIA MARINA* (L.) Druce, *FESTUCA MARINA* L., *F. ROTTBOELLIODES* Kunth, *POA LOLIACEA* Huds. *Stiff Sand-grass.* H., 183. Beside the tidal estuary. Rare and not seen recently. V.-c. 18. Rainham, 1905, *L.B.H.*; *Hb.H.* Purfleet, 1910, *P.H.C.*; *Hb.L.N.H.S.*

C. RIGIDUM (L.) C. E. Hubbard, *POA RIGIDA* L., *SCLEROPA RIGIDA* (L.) Griseb. *Hard Poa*, *Fern Grass.* H., 181. Dry banks, walls, railway tracks, etc., especially on the chalk. Reported from all the v.-cc. except 19.

BRIZA L.

B. MEDIA L. *Common Quaking-grass* or *Totter Grass.* H., 189. Old meadows and pastures. Locally plentiful especially on calcareous soils. V.-cc. 16 & 17. Common on the chalk. Wimbledon Common; *C.A.* Bookham Common; *A.W.J.* V.-c. 18. Stapleford Tawney, 1913, *P.H.C.*; *Hb.L.N.H.S.* Waltham Abbey, 1952; *R.M.P.* V.-c. 20. Rickmansworth, 1908; *P.H.C.* Colney Furze Field, 1913; *C.S.N.* Calcareous bog, Wormley Wood, 1955; *J.E.L.* & *B.T.W.* Panshanger, 1952; Hertford Heath, 1954; *R.M.P.* V.-c. 21. Harefield, 1908; *J.E.C.*; 1955; *D.H.K.* Northwood, 1911; Yiewsley, 1919; *J.E.C.* Between Ruislip and Harefield, 1927; *L.J.T.* Near Littleton; *B.W.* Finchley Common; *C.S.N.* Warren Gate; *P.H.C.*; 1952; Springwell; South Mimms; Stanmore Common; Colnbrook; Laleham; Staines; Pinner Wood, 1939-55; *D.H.K.* V.-c. 24. Iver; *P.H.C.*

B. MAXIMA L. *Large Quaking-grass*. H., 187. Alien. Mediterranean region. V.-c. 21. Rubbish-tip, Hanwell, 1950, *D.H.K.*; *Hb.K.* conf. *C.E.H.*

POA L.

P. CHAIXII Vill. *Broad-leaved Meadow-grass*. H., 161. Alien. Europe. Naturalised in shady places. Very rare. V.-c. 17. Orchard, Limpsfield, 1933, *R.W.R.*; *Hb.R.* Queen's Cottage grounds, Kew Gardens, 1933, *C.E.H.*; *Hb.L.* V.-c. 20. Watford, 1955; *R.M.H.**

P. PRATENSIS L. *Meadow Grass*. H., 167. A very variable grass occupying a great variety of habitats from wall tops and road sides to rubbish-tips and waste ground. Common throughout the Area. The var. *LATIFOLIA* Weihe is recorded from v.-c. 21. Canal bank between Brentford and Hanwell, *D.H.K.*; *Hb.K.* det. *C.E.H.*

P. ANGUSTIFOLIA L., *P. PRATENSIS* subsp. *ANGUSTIFOLIA* (L.) Gaud. *Narrow-leaved Meadow-grass*. H., 165. Meadows, grassy places, waste ground, etc. Probably common but much confused with *P. PRATENSIS*. V.-c. 16. Chalkpit in wood, 1½ miles S. of Eynsford railway station, 1955, *J.E.L.*; *Hb.L.* V.-c. 17. Common. V.-c. 21. Frequent.

P. PALUSTRIS L. *Swamp Meadow-grass*. H., 159. Marshes and margins of rivers and lakes, also as a casual on waste ground. Rare. V.-c. 17. Dried-up bed of Fetcham Millpond, 1944, *J.E.L.*; *Hb.L.* det. *C.E.H.* V.-c. 21. Air-raid shelter, Hyde Park, 1945, *W.J.L.S.*; *Hb.L.* det. *C.E.H.* Shadwell Basin, 1945, *J.E.L.*; bombed site, Upper Thames Street, 1954, *R.A.G.*, *D.McC.* & *J.E.L.*; *Hb.L.* By the lake, Chiswick House grounds, plentiful, 1955; *R.A.B.*; *D.H.K.* The var. *EFFUSA* Aschers. & Graebn. is recorded from v.-c. 17. Kew Green, 1932, *J.Fr.*; *Hb.L.*

P. TRIVIALIS L. *Rough Meadow-grass*. H., 163. Meadows, pastures, waste ground, rubbish-tips, stream sides, etc. Very common in all the v.-cc.

P. NEMORALIS L. *Wood Meadow-grass*. H., 153. Woods and shady hedgebanks, occasionally in more open situations. Common throughout the Area.

P. COMPRESSA L. *Flattened Meadow-grass*. H., 171. Dry banks and waste ground on light soils, also on old walls. Rather rare, or overlooked. V.-c. 16. Crayford; Northfleet; Stone, 1933; *P.H.C.* Downe village, old wall, 1955; *B.W.* & *J.E.L.* V.-c. 17. Limpsfield, old wall, 1924; Richmond, 1931; *R.W.R.*; old wall, 1945-55; *B.W.* Towing path near Kew, 1925; river bank, Barnes, 1927, *J.E.L.*; *Hb.L.* Betchworth railway station, 1951; *B.M.C.M.* V.-c. 18. Chalkpit, Grays, 1949; *L.N.H.S. Excursion*. Wall top, Epping, 1951; *R.M.P.* V.-c. 19. Wall top, Netteswell, 1951; *R.M.P.* V.-c. 20. Totteridge, 1910, *P.H.C.*; *Hb.L.N.H.S.* Hertingfordbury, 1920; *P.H.C.* V.-c. 21. Highgate Woods, 1903; *L.H.B.* East Finchley; Finchley; Hackney Marshes;

*Harley, R. M.

Yiewsley; *J.E.C.* Canonbury, 1944; *R.S.R.F.* Cowley; West Drayton; Isleworth; Hounslow Heath; Osterley Park walls; Roxeth, 1944-50; *D.H.K.* V.-c. 24. Langley, 1919; *L.B.H.*

P. ANNUA L. *Annual Meadow-grass*. H., 145. Cultivated and waste ground, roadsides, garden paths, etc. The most abundant grass species in the Area.

GLYCERIA R.Br.

G. MAXIMA (Hartm.) Holmb., *G. AQUATICA* (L.) Wahlb., non J. & C. Presl. *Reed Sweet-grass*. H., 103. Banks of rivers, streams and canals. Frequent in all the v.-cc.

G. FLUITANS (L.) R.Br. *Floating Sweet-grass*, *Flote Grass*. H., 97. Ponds, shallow streams, swamps, etc. Probably very common throughout the Area but much confused with *G. DECLINATA* and *G. PLICATA*. A proliferous form is reported from v.-c. 21. Harefield, 1924; *J.E.C.*

× *PLICATA* = *G. × PEDICELLATA* Towns. H., 99. V.-c. 16. River Darent at Eynsford, 1920; Darrick Common, 1921; *W.W.* V.-c. 18. Walthamstow Ponds, 1923; Woodford; *R.W.R.* V.-c. 21. Pond between Brentford and Hanwell, 1929, *C.E.H.*; *Hb.Kew.*

G. PLICATA Fr. *Plicate Sweet-grass*. H., 101. Ponds, ditches, shallow streams and swamps. Possibly common but confused with *G. FLUITANS* and *G. DECLINATA*. V.-c. 16. Chislehurst Common; *W.W.* River Darent, Lullingstone, 1911, *W.H.Gr.*; *Hb.L.* Shoreham, 1924; *E.B.B.* det. *R.W.R.* V.-c. 17. Limpsfield, common, 1921; *R.W.R.* Epsom Sewage Farm, abundant, 1938, *A.E.E.*; *Hb.E.C.M.* V.-c. 18. Loughton, 1952; *R.M.P.* V.-c. 19. Roydon, 1955; *R.M.P.* V.-c. 21. Highgate Woods, 1904; *C.S.N.* Harefield; Springwell; near Ruislip; Yiewsley; Poyle; near Colnbrook; West Drayton; near Heathrow, 1944-55; *D.H.K.*

C. DECLINATA Bréb. *Glaucous Sweet-grass*. H., 95. In similar situations to the preceding species. Probably common but confused with *G. FLUITANS* and *G. PLICATA*. V.-c. 16. Pauls Cray Common; *W.W.* V.-c. 17. Pond at Coldharbour Beeches, Titsey, 1923; margin of pond near Limpsfield Grange, 1924; *R.W.R.* det. *C.E.S.* Pond near Epsom, 1925; Dew pond, Warlingham, 1927, *J.E.L.*; *Hb.L.* both det. *C.E.H.* Addington, 1942, *E.C.W.*; *Hb.L.* V.-c. 18. Walthamstow, 1923; *R.W.R.* Bell Common, Epping Forest, 1954; *R.M.P.* V.-c. 20. Hertford Heath, 1955; *B.W.* det. *A.M.* Sandy Lodge, 1955; *J.G.D.* det. *C.E.H.* V.-c. 21. Ruislip Common, 1947; *N.Y.S.* Bushy Park, *B.W.*; West Drayton, *D.H.K.*; *Hb.K.* both det. *C.E.H.* Near Hounslow Heath, 1948; *C.E.H.* & *D.H.K.* West Heath, Hampstead, 1952; *D.H.K.* det. *C.E.H.*

PUCCINELLIA Parl.

P. PSEUDO-DISTANS (Crép.) Jansen & Wachter. H., 175. Salt marshes, etc. Very local. V.-c. 16. Swanscombe Marshes; *F.R.*

Stone Marshes, 1945; *J.E.L. & F.R.*; 1947; *J.E.L.*; *Hb.L.* det. *P.J.**
Near Crayford Ness, Erith, 1951; *J.E.L.*, *B.W.* & *J.C.C.* V.-c. 18.
Ripple Level, Barking, 1954; *J.E.L.*

P. DISTANS (L.) Parl., *GLYCERIA DISTANS* (L.) Wahlenb. *Reflexed Salt-marsh Grass.* H., 175. Salt marshes and mud flats by the tidal estuary, rarely on waste ground inland. Local. V.-c. 16. Dartford Marsh, 1931; *P.H.C.* Swanscombe and Erith Marshes; *F.R.* Ditch, Stone Marshes, 1935, *E.C.W.*; near Littlebrook Farm, Stone Marshes, 1947, *J.E.L.*; *Hb.L.* both det. *P.J.* Near Crayford Ness, Erith, 1951, *J.E.L.*, *B.W.* & *J.C.C.*; *Hb.L.* V.-c. 18. Rainham, 1905; *L.B.H.*; *Hb.H.* Purfleet, 1910, *P.H.C.*; *Hb.L.N.H.S.* Between Ilford and Barking, 1912; *R.W.R.* Ripple Level, Barking, 1954; *J.E.L.* V.-c. 21. Hackney Marshes, 1909-1920. Rough field near Yeading, with *Aster Tripolium*, *Atriplex Babingtonii*, etc., 1949; *R.A.B.*; 1954; *D.H.K.* Bombed site by Cripplegate Institute, E.C., 1945; *J.E.L. & F.E.W.*

P. MARITIMA (Huds.) Parl., *GLYCERIA MARITIMA* (Huds.) Wahlb. H., 177. Salt marshes and mud flats by the tidal estuary. Local. V.-c. 16. Stone Marshes, 1930; *R.W.R.* Swanscombe Marshes, 1938; *P.H.C.* Erith Marshes to Northfleet; *F.R.* Near Crayford Ness, Erith, 1951; *J.E.L.*, *B.W.* & *J.C.C.* V.-c. 18. Grays, 1910, *P.H.C.*; 1945; *J.E.L. & F.R.* Swanscombe Marshes; *F.R.*

P. FASCICULATA (Torr.) Bickn., *GLYCERIA BORRERI* (Bab.) Bab, *POA FASCICULATA* Torr. *Borrer's Salt-marsh Grass.* H., 173. Salt marshes and mud flats by the tidal estuary, and as an adventive on a railway bank. Rare. V.-c. 16. Stone Marshes, 1935, *E.C.W.*; *Hb.L.* det. *P.J.*; *F.R.* V.-c. 21. Railway bank, East Finchley, 1910, *J.E.C.*; *Hb.Mus. Brit.* det. *A.M.*

P. RUPESTRIS (With.) Fernald & Weatherby, *GLYCERIA RUPESTRIS* (With.) E. S. Marshall, *G. PROCUMBENS* (Curt.) Dum., *SCLEROCHLOA PROCUMBENS* (Curt.) Beauv. *Stiff Salt-marsh Grass.* H., 179. Salt marshes and muddy places by the tidal estuary. Rare. V.-c. 16. Swanscombe Marshes; *F.R.*; 1946; *L.N.H.S. Excursion.* Near Crayford Ness, 1951, *J.E.L.*, *B.W.* & *J.C.C.*; *Hb.L.* V.-c. 18. Muddy creek, Grays, 1927, *I.A.W.*; *Hb.L.* det. as "shade-form" by *P.J.*

FESTUCA L.

F. GIGANTEA (L.) Vill. *Giant Fescue.* H., 125. Damp open woodlands and shady places. Common in all the v.-cc.

F. ARUNDINACEA Schreb. *Tall Fescue.* H., 123. Stream and river sides, water meadows, damp pastures. Frequent in all the v.-cc. except 19 where although unrecorded it is almost certain to occur.

× *LOLIUM PERENNE* = × *FESTULOLIUM HOLMBERGII* (Dörfl.) P. Fourn. H., 127. V.-c. 17. Ham gravel pits, 1947, *N.Y.S. & C.E.H.*; *Hb.Kew.*

*Jansen, P.

F. PRATENSIS Huds. *Meadow Fescue*. H., 121. Meadows, pastures and roadsides. Common throughout the Area. The var. *PSEUDOLIACEA* Hack. is reported from v.-c. 21. Towing-path near Hampton Court, 1905, *C.S.N.*; *Hb.L.N.H.S.*

× *LOLIUM PERENNE* = × *FESTULOLIUM LOLIACEUM* (Huds.) P. Fourn., *FESTUCA LOLIACEA* Huds. H., 127. V.-c. 16. Darent Meads, 1946; *F.R.* V.-c. 17. Near Weybridge, 1922; *W.W.* Old Deer Park, Richmond, 1929; Chertsey Mead, 1933, *J.E.L.*; *Hb.L.*; 1954; Kew Gardens, 1955; *D.H.K.* West Ewell, 1946, *E.C.W.*; *Hb.Kew.* V.-c. 18. Dagenham, 1929, *R.M.*; *Hb.Kew.* Loughton, 1954; *R.M.P.* V.-c. 20. Bayfordbury, 1951, *C.E.H.*; *Hb.Kew.* V.-c. 21. Finchley, 1909, *J.E.C.*; *Hb.Mus.Brit.* det. *A.M.* Between Brentford and Hanwell, 1927, *C.E.H.*; *Hb.Kew.* Harefield Moor, *B.W.*; Springwell; West Heath, Hampstead; Hanwell, 1944-55, *D.H.K.*; *Hb.K.* Ealing, 1950; *L.M.P.S.* det. *D.H.K.* Near Hounslow Heath, abundant, 1949; *C.E.H.* & *D.H.K.*

F. HETEROPHYLLA Lam. *Various-leaved Fescue*. H., 113. Alien. Central and Southern Europe. Established in shady places. Very rare. V.-c. 17. Queen's Cottage grounds, Kew Gardens, 1936, *C.E.H.*; *Hb.L.*

F. RUBRA L. *Red or Creeping Fescue*. H., 114-117. Rough pastures, meadows, heaths, commons and grassy places. A common, but very variable species which is frequent in all the v.-cc. The subsp. *RUBRA* var. *RUBRA* is probably the commonest form, but the following taxa have also been recorded:—Var. *BARBATA* (Schrank) Richt. V.-c. 21. Canal bank, Harefield, *N.Y.S.*; *Hb.Kew* det. *C.E.H.* Var. *GRANDIFLORA* (Hack.) Howarth. V.-c. 17. Epsom College, 1937, *A.E.E.*; *Hb.E.C.M.* det. *W.O.H.* Subsp. *COMMUTATA* Gaud. V.-c. 17. Cornfield near Ashted, 1929, *E.C.W.*; *Hb.L.* det. *W.O.H.* V.-c. 18. Snaresbrook; Brentwood Common; *R.W.R.*

F. OVINA L. *Sheep's Fescue*. H., 109. Heaths, commons, moors and downs. Locally abundant. V.-c. 16. Common. V.-c. 17. Common on the chalk and on acid heaths. V.-c. 18. Brentwood Common; *R.W.R.* Snaresbrook Heath; Cooks Folly Wood; *R.W.R.* & *E.L.R.* V.-c. 19. Epping Plain, 1954; *R.M.P.* V.-c. 21. North Hill, Highgate; West Heath, Hampstead; *L.B.H.*; Hounslow Heath; Harrow Weald Common; Whitechurch Common; Ruislip Common; Uxbridge Common; Harefield; near Staines, 1939-55; *D.H.K.* Syon Park, 1945, *B.W.* & *D.H.K.*; *Hb.K.* det. *C.E.H.*

F. LONGIFOLIA Thuill., *F. TRACHYPHYLLA* (Hack.) Krajina, *F. DURIUSCULA* auct., non L. *Hard Fescue*. H., 111. Alien. Europe. Sown, and now established, on railway banks, on road verges and in parks and recreation grounds. Locally abundant. V.-c. 16. Chislehurst Common; *W.W.* Road verge, Beckenham, 1946; *D.H.K.* V.-c. 21. Between Poyle and Yeoveney, 1948, *F.E.W.* & *D.H.K.*; roadsides, Chiswick, 1949, *D.H.K.*; *Hb.K.* both det. *C.E.H.* Bombed site, Jewin Street, *E.C.*, 1952, *J.E.L.*; *Hb.L.*



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PUBLICATIONS OF THE SOCIETY.

London Naturalist, 1921-31, each 3s (1926-28 out of print); 1932-35, each 5s (1933 O.P.); 1936-46, each 3s 6d (1937-38 O.P.); 1947-54, each 7s 6d.

London Bird Report, 1936-46, each 1s 6d; 1936-38, 1943, 1947-53, each 2s 6d. (Two-thirds price to Members and Associates.)

Transactions of the London Natural History Society, 1916-20, each 3s.

Map of the Society's Area, 1s.

" LONDON NATURALIST " REPRINTS.

Note.—Dates in brackets refer to issue of L.N. and are not dates of publication.

- 21, 22, 25, 30. **Survey of Limpsfield Common**: 1939, 6d; 1940, 3d; 1942, 3d; 1943, 2d.
- 24. **Randolph William Robbins (1871-1941)**, (1941), 6d.
- 29, 33, 35, 44, 46, 51, 60, 67, 71, 75, 81, 87, 99. **Survey of Bookham Common**: 2, 1943, with maps, 4d; 3, 1944, with map, 9d; 4, 1945, 6d; 5, 1946, with map, 9d; 6, 1947, 1s; 7, 1948, 1s; 8, 1949, 2s; 9, 1950, 1s 6d; 10, 1951, 1s 6d; 11, 1952, 1s 6d; 12, 1953, 1s 6d; 13, 1954, 1s 6d; 14, 1955, 1s 6d.
- 34, 36, 45, 47, 52. **Epping Forest Survey**: 3, 1944, with maps, 9d; 4, 1945, 6d; 5, 1946, 6d; 6, 1947, with map, 9d; 7, 1948, 1s.
- 34a. **Docks and Sorrels of the London Area**, by J. E. Lousley (1944), 6d.
- 37. **William Curtis (1746-1799)**, by J. E. Lousley (1945), 6d.
- 38. **Neuroptera of the Home Counties**, by E. B. Pinniger (1945), 6d.
- 41. **Notes on the Flora of Middlesex**, by Douglas H. Kent (1946), 6d.
- 42. **The Brambles of Middlesex**, by C. Avery and W. C. R. Watson (1946), 6d.
- 43. **Coenagrion scitulum Rambur, a Dragonfly New to Britain**, by Edward B. Pinniger (1946) (with plate), 1s.
- 48. **Hymenoptera Aculeata of Hampstead Heath** (with map), by K. M. Guichard and I. H. H. Yarrow (1947), 1s 6d.
- 49, 61, 68, 72, 76, 82, 88. **City Bombed Sites Survey**: 1947, 6d; (1948 O.P.), 1949, 6d; 1950, 6d; 1951, 6; 1952, 6d; 1953, 9d; 1954, 9d.
- 50. **Middlesex Plant Records**, 1947, by D. H. Kent, 9d.
- 55. **The Story of our Society**, by L. G. Payne (Part I, 1947, Part II, 1948), 1s 6d.
- 56. **Ecological Aims and Methods for Zoologists**, by Dr O. W. Richards (1948), 6d.
- 66. **Mammals, etc., of the London Area, Additional Records**, by R. S. R. Fitter (1949), 9d.
- 62. **Butterflies of the London Area**, by C. G. M. de Worms (1949), 1s 6d.
- 63, 69. **Report on the Temporary Geological Sections** (1949), 1s; (1950), 2s.
- 64. **Kent Plant Records**, by F. Rose (1949), 9d.
- 65. **Hepatics of the London Area**, by R. A. Boniface (1949), 9d.
- 70, 73, 77, 83, 90, 100. **Hand List of the Plants of the London Area**, by D. H. Kent and J. E. Lousley, Part I (1950), 2s 6d; Part II (1951), 2s 6d; Part III (1952), 2s 6d; Part IV (1953), 2s 6d; Part V (1954), 2s 6d; Part VI (1955), 2s 6d.
- 74, 92, 101. **The Flies of the London Area**, I, Conopidae, by L. Parmenter (1951), 6d; II, Culicidae, sub-family Culicinae (Mosquitoes), with key to species of Culex, by E. R. Nye 1954, 1s 6d; III, Trypetidae, by M. Niblett (1955), 1s.
- 78. **Habitats of the London Area**, by J. H. G. Peterken (1952), 1s.
- 79. **Ecology and Distribution of the Satyridae in West Kent**, by D. F. Owen (1952), 1s 6d.
- 80. **A Subject Index of the Society's Journals, 1914-51**, by R. S. R. Fitter (1952), 1s.
- 84, 89, 102. **The Moths of London and its Surroundings**, by C. G. M. de Worms, Part I (1953), with map, 2s; Part II (1954), 2s; Part III (1955), 2s.

" LONDON NATURALIST " REPRINTS (Contd.).

- 85, 91. **Post-war Progress in Nature Conservation in the London Area**, by C. P. Castell (1953), 1s; **Correction and Additions** (1954), 6d.
86. **London Clay of Oxshott**, by M. M. Brown and C. P. Castell (1953), 6d.
93. **An Exposure of Chalk Rock near Westerham, Kent**, by J. S. Hampton (1954), 9d.
94. **Additions to the London Clay Fauna of Oxshott, Surrey**, by M. M. Brown and C. P. Castell (1954), 6d.
95. **The Butterflies of the North-West Kent Marshes with special reference to the 1953 Floods**, by J. F. Burton (1954), 1s.
96. **Notes on the Butterflies of Wimbledon Common**, by A. W. Jones (1954), 1s.
97. **Some Aspects of Dispersal and Succession of Plants in some Epping Forest Ponds**, by C. H. Selby (1954), with plate, 1s 6d.
98. **The Bryophytes of Boxhill**, by E. C. Wallace (1954), 1s.
The Life of A. W. Bacot, by Prof. Major Greenwood (1924) (ex *Journal of Hygiene*), 6d.

All publications of the Society may be obtained from the General Secretary.

LONDON NATURAL HISTORY SOCIETY.

THE Society is an amalgamation of the City of London Entomological and Natural History Society, founded in 1858, and the North London Natural History Society, founded in 1892.

Meetings are held on Tuesday evenings, either at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1, or at the Linnean Society's rooms, Burlington House, Piccadilly, W.1. The half-yearly Programme should be consulted as to the venue of any particular meeting. The room is open from 6 p.m. to 9 p.m., and meetings begin punctually at 6.30 p.m. and end about 8.30 p.m., unless other arrangements are announced. The Library and Collections are available to members at the Royal Society for the Protection of Birds headquarters, 25 Eccleston Sq., S.W.1, from 6 p.m. to 8 p.m. on the second Monday and fourth Thursday in each month.

At all indoor meetings specimens of Natural History interest are exhibited, and papers on various subjects are read and discussed. Visitors may be introduced by members of the Society, and are cordially welcome. Frequent field meetings are held at week-ends, particulars of which are contained in the Programme.

ANNUAL SUBSCRIPTIONS are payable to the Assistant Treasurer on 1st January each year and for new Members on election. For details of the various classes of membership see current Programme.

All members and associates (other than additional family members) are entitled to one copy of *The London Naturalist* and *The London Bird Report* free.

Further information and Programme may be obtained from the General Secretary:—Mrs. SMALL, 13 Woodfield Crescent, Ealing, W.5.

